Water Quality in Alluvial Aquifers of the Southern Rocky Mountains Physiographic Province, Upper Colorado River Basin, Colorado, 1997

By Lori E. Apodaca and Jeffrey B. Bails

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U.S. DEPARTMENT OF THE INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Charles G. Groat, Director

For additional information write to:

District Chief
U.S. Geological Survey
Box 25046, Mail Stop 415
Denver Federal Center
Denver, CO 80225–0046

Copies of this report can be purchased from:

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FOREWORD

The mission of the U.S. Geological Survey (USGS) is to assess the quantity and quality of the earth resources of the Nation and to provide information that will assist resource managers and policymakers at Federal, State, and local levels in making sound decisions. Assessment of water-quality conditions and trends is an important part of this overall mission.

One of the greatest challenges faced by water-resources scientists is acquiring reliable information that will guide the use and protection of the Nation's water resources. That challenge is being addressed by Federal, State, interstate, and local water-resource agencies and by many academic institutions. These organizations are collecting water-quality data for a host of purposes that include: compliance with permits and water-supply standards; development of remediation plans for a specific contamination problem; operational decisions on industrial, wastewater, or water-supply facilities; and research on factors that affect water quality. An additional need for water-quality information is to provide a basis on which regional and national policy decisions can be based. Wise decisions must be based on sound information. As a society we need to know whether certain types of water-quality problems are isolated or ubiquitous, whether there are significant differences in conditions among regions, whether the conditions are changing over time, and why these conditions change from place to place and over time. The information can be used to help determine the efficacy of existing water-quality policies and to help analysts determine the need for and likely consequences of new policies.

To address these needs, the Congress appropriated funds in 1986 for the USGS to begin a pilot program in seven project areas to develop and refine the National Water-Quality Assessment (NAWQA) Program. In 1991, the USGS began full implementation of the program. The NAWQA Program builds upon an existing base of water-quality studies of the USGS, as well as those of other Federal, State, and local agencies. The objectives of the NAWQA Program are to:

- Describe current water-quality conditions for a large part of the Nation's freshwater streams, rivers, and aquifers.
- Describe how water quality is changing over time.
- Improve understanding of the primary natural and human factors that affect water-quality conditions.

This information will help support the development and evaluation of management, regulatory, and monitoring decisions by other Federal, State, and local agencies to protect, use, and enhance water resources.

The goals of the NAWQA Program are being achieved through ongoing and proposed investigations of 59 of the Nation's most important river basins and aquifer systems, which are referred to as study units. These study units are distributed throughout the Nation and cover a diversity of hydrogeologic settings. More than two-thirds of the Nation's freshwater use occurs within the 59 study units, and more than two-thirds of the people served by public water-supply systems live within their boundaries.

National synthesis of data analysis, based on aggregation of comparable information obtained from the study units, is a major component of the program. This effort focuses on selected water-quality topics using nationally consistent information. Comparative studies will explain differences and similarities in observed water-quality conditions among study areas and will identify changes and trends and their causes. The first topics addressed by the national synthesis are pesticides, nutrients, volatile organic compounds, and aquatic biology. Discussions on these and other water-quality topics will be published in periodic summaries of the quality of the Nation's ground and surface water as the information becomes available.

This report is an element of the comprehensive body of information developed as part of the NAWQA Program. The program depends heavily on the advice, cooperation, and information from many Federal, State, interstate, Tribal, and local agencies and the public. The assistance and suggestions of all are greatly appreciated.

Robert M. Hirsch
Chief Hydrologist

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CONVERSION FACTORS

Multiply	By	To obtain
foot (ft)	0.3048	meter
gallon (gal)	3.78	liter
gallon per minute (gal/min)	0.06308	liter per second
inch per year (in/yr)	25.4	millimeter per year
picocuries per liter (pCi/L)	0.3125	tritium units (TU)
pound (lb)	0.4536	kilogram
pound per square inch (lb/in^2)	6.895	kilopascal
square mile (mi^2)	2.59	square kilometer

Degree Celsius (°C) may be converted to degree Fahrenheit (°F) by using the following equation:

$$°F = 9/5\,(°C) + 32.$$

Degree Fahrenheit (°F) may be converted to degree Celsius (°C) by using the following equation:

$$°C = 5/9\,(°F - 32).$$

ADDITIONAL ABBREVIATIONS:

cols/100 mL	colonies per 100 milliliters
DOC	dissolved organic carbon
DWA	drinking water advisory
HA	health advisory
L	liter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MBAS	methylene blue active substances
µS/cm	microsiemens per centimeter at 25 degrees Celsius
mg/L	milligram per liter
mL	milliliter
µg/L	microgram per liter
NTU	nephelometric turbidity unit
µm	micrometer
PMCL	proposed maximum contaminant level
SMCL	secondary maximum contaminant level
VOC	volatile organic compound
as N	as quantified as measured nitrogen
as P	as quantified as measured phosphorus

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ABSTRACT

Water-quality samples were collected in the summer of 1997 from 45 sites (43 wells and 2 springs) in selected alluvial aquifers throughout the Southern Rocky Mountains physiographic province of the Upper Colorado River Basin study unit as part of the U.S. Geological Survey National Water-Quality Assessment Program. The objective of this study was to assess the water-quality conditions in selected alluvial aquifers in the Southern Rocky Mountains physiographic province. Alluvial aquifers are productive aquifers in the Southern Rocky Mountains physiographic province and provide for easily developed wells. Water-quality samples were collected from areas where ground water is used predominantly for domestic or public water supply. Twenty-three of the 45 sites sampled were located in or near mining districts. No statistical differences were observed between the mining sites and sites not associated with mining activities for the majority of the constituents analyzed. Water samples were analyzed for major ions, nutrients, dissolved organic carbon, trace elements, radon-222, pesticides, volatile organic compounds, bacteria, and methylene blue active substances. In addition, field parameters consisting of water temperature, specific conductance, dissolved oxygen, pH, turbidity, and alkalinity were measured at all sites.

Specific conductance for the ground-water sites ranged from 57 to 6,650 microsiemens per centimeter and had higher concentrations measured in areas such as the northwestern part of the study unit. Dissolved oxygen ranged from 0.1 to 6.0 mg/L (milligrams per liter) and had a median concentration of 2.9 mg/L. The pH field values ranged from 6.1 to 8.1; about 4 percent of the sites (2 of 45) had pH values outside the range of 6.5 to 8.5 and so did not meet the U.S. Environmental Protection Agency secondary maximum contaminant level standard for drinking water. About 5 percent (2 of 43) of the samples exceeded the U.S. Environmental Protection Agency recommended turbidity value of 5 nephelometric turbidity units; one of these samples was from a monitoring well.

The U.S. Environmental Protection Agency secondary maximum contaminant levels for dissolved solids, sulfate, iron, and manganese were exceeded at some of the sites. Higher dissolved-solids concentrations were detected where sedimentary rocks are exposed, such as in the northwestern part of the Southern Rocky Mountains physiographic province. The dominant water compositions for the sites sampled are calcium, magnesium, and bicarbonate. However, sites in areas where sedimentary rocks are exposed and sites located in or near mining areas show more sulfate-dominated waters. Nutrient concentrations were less than the U.S. Environmental Protection Agency drinking-water standards. Only one site had a nitrate concentration greater than 3.0 mg/L, a level indicating possible influence from human activities. No significant differences among land-use/land-cover classifications (forest, rangeland, and urban) for drinking-

water wells (42 sites) were identified for dissolved-solids, sulfate, nitrate, iron or manganese concentrations. Radon concentrations were higher in parts of the study unit where Precambrian rocks are exposed. All radon concentrations in ground water exceeded the previous U.S. Environmental Protection Agency proposed maximum contaminant level for drinking water, which has been withdrawn pending further review.

Pesticide detections were at concentrations below the reporting limits and were too few to allow for comparison of the data. Eight volatile organic compounds were detected at six sites; all concentrations complied with U.S. Environmental Protection Agency drinking-water standards. Total coliform bacteria were detected at six sites, but no *Escherichia coli* (*E. coli*) was detected. Methylene blue active substances were detected at three sites at concentrations just above the reporting limit. Overall, the water quality in the Southern Rocky Mountains physiographic province is suitable for most uses, but natural and human factors affect the water quality.

INTRODUCTION

In 1991, the U.S. Geological Survey (USGS) began full implementation of the National Water-Quality Assessment (NAWQA) Program. The Upper Colorado River Basin (UCOL) was one of the 59 study units selected for assessing the status and trends in water quality and relating these to the natural and human factors that can affect the water quality (Gilliom and others, 1995). One component of the NAWQA ground-water sampling efforts is the study-unit survey. This survey is designed to assess the water quality in major aquifer systems by sampling preexisting wells and analyzing for a wide variety of chemical constituents. In assessing the ground-water-quality conditions in the UCOL study unit, the important aquifers for present and future uses were identified. Alluvial aquifers were selected in the Southern Rocky Mountains physiographic province because ground water is an important drinking-water resource in this physiographic province. Alluvial aquifers in the UCOL study unit are productive and are present throughout most of the valleys in the Southern Rocky Mountains physiographic province. Forty-five ground-water sampling sites were randomly selected in the study unit: 29 preexisting wells in alluvial aquifers in a variety of land uses (which includes sites in or near mining districts), 14 preexisting wells in alluvial aquifers selected specifically in or near mining districts throughout the Southern Rocky Mountains physiographic province, and 2 springs. Historical ground-water-quality data are limited in this area; therefore, the data collected from this study help to establish baseline conditions of the ground-water quality in selected areas and can be used for future comparisons.

Purpose and Scope

This report presents data on ground-water-quality conditions in selected alluvial aquifers in the Southern Rocky Mountains physiographic province of the UCOL study unit. The purpose of this study was to assess the ground-water quality in a major aquifer system in the Upper Colorado River Basin by sampling preexisting wells in a single geologic unit. Ground water in alluvial aquifers was sampled in August and September 1997 throughout the Southern Rocky Mountains physiographic province in order to assess water-quality conditions and relate the findings to natural and human factors that may be affecting the concentrations. Samples from 45 ground-water sites (preexisting wells and springs) in alluvial aquifers within the Southern Rocky Mountains physiographic province were analyzed for 10 major ions, 6 nutrients, dissolved organic carbon (DOC), 18 trace elements, radon-222, 47 pesticides, 86 volatile organic compounds (VOC's), bacteria (total coliform and *Esherichia coli*), and methylene blue active substances (MBAS). Thirteen of the sites located in or near mining districts were not sampled for pesticides and VOC’s. In addition to these constituents, field parameters consisting of water temperature, specific conductance, dissolved oxygen, pH, turbidity, and alkalinity were measured.

Acknowledgments

The authors thank the many homeowners and public organizations that allowed the USGS to sample their wells. Without their cooperation, this study would not have been possible. We also thank members

of the Upper Colorado River Basin NAWQA Liaison Committee, who provided us with contacts and helped us obtain permission from homeowners in the study area. In particular, we thank Tyler Martineau, formerly of the Upper Gunnison River Water Conservancy District.

DESCRIPTION OF STUDY UNIT

The drainage area of the UCOL is approximately 17,800 mi^2, and the Southern Rocky Mountains physiographic province comprises about 50 percent of this area (fig. 1). North-northwest-trending mountain ranges and alluvial basins characterize the topography in the Southern Rocky Mountains physiographic province. Land-surface altitudes range from about 7,000 ft above sea level in the valleys to about 14,000 ft for the higher peaks. The mountain ranges that bound the alluvial basins are composed of igneous, metamorphic, and sedimentary rocks. As a result of the diverse topography, the climate in the study unit varies. Precipitation in the study unit can be as much as 40 in/yr; most of this precipitation occurs in the form of snow during the winter. Mean annual temperatures from 1961 to 1990 in mountainous areas were about 34ºF and increased to about 46ºF westward toward the Colorado Plateau physiographic province (National Oceanic and Atmospheric Administration, 1994).

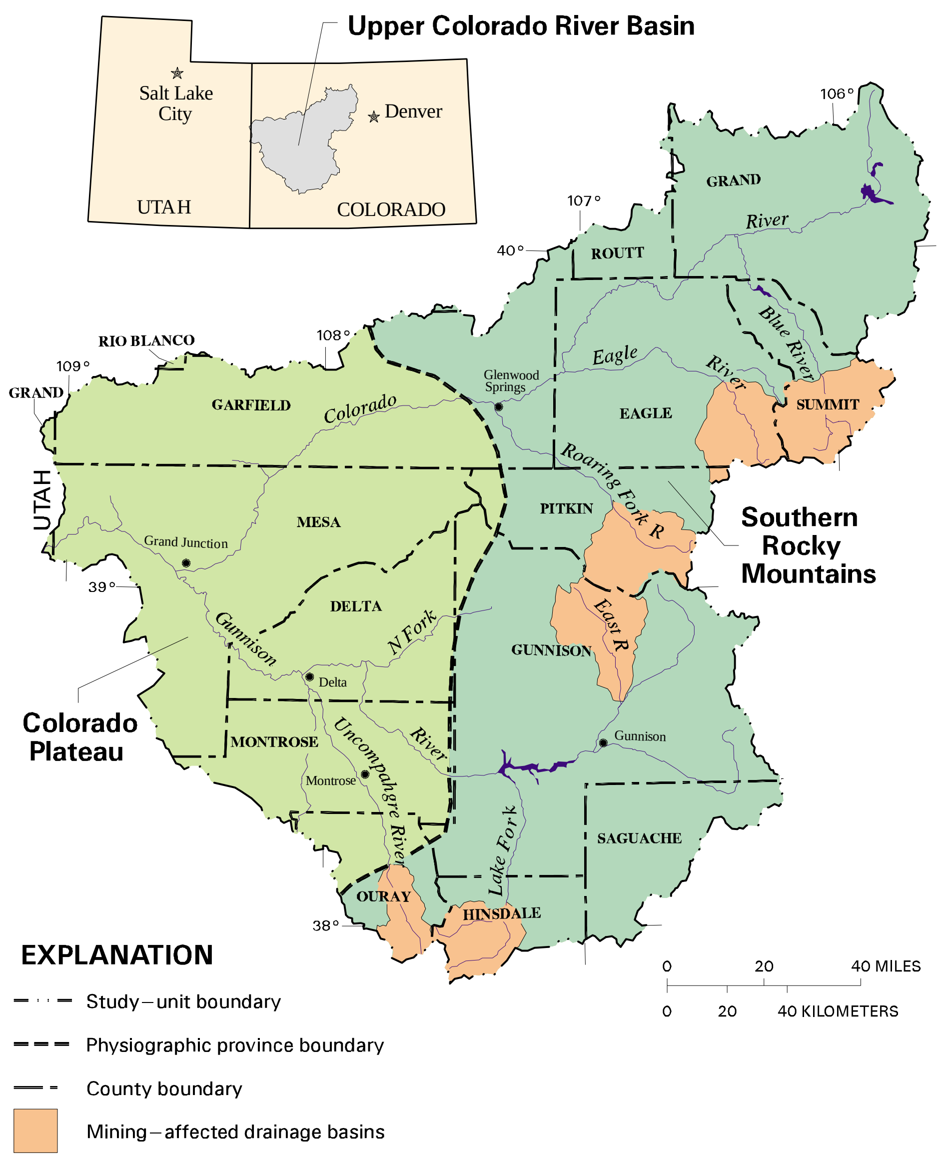

Figure 1. Location of the Upper Colorado River Basin study unit and physiographic provinces. (Physiographic province boundary from Fenneman and Johnson, 1946.)

The land use/land cover in the Southern Rocky Mountains physiographic province is predominantly forest and rangeland (Apodaca and others, 1996). Other important land uses in the study unit are urban, mining, and agriculture (predominantly hayfields). In some of the mountain communities, population increases are occurring at a rate of more than 5 percent annually (U.S. Bureau of the Census, 1994). In addition, mining activities have been an important economic base in the Southern Rocky Mountains physiographic province of Colorado. In the Southern Rocky Mountains physiographic province there are extensive mineral deposits, which have principally been mined for copper, gold, lead, molybdenum, silver, and zinc (Romberger, 1980).

Ground-water resources in the study unit have not been extensively developed and provide about 1 percent of the total water use in the UCOL study unit (Apodaca and others, 1996). However, domestic water in rural areas is supplied almost entirely from ground-water sources (Colorado Department of Public Health and Environment, 1994). Ground-water resources also provide water for irrigation, public supply, and industrial use. In the Southern Rocky Mountains physiographic province, ground-water resources are used for public water supply in Eagle, Garfield, Grand, Gunnison, and Summit Counties (fig. 1). The most productive and easily developed wells in the study unit are completed in alluvial aquifers (distribution of alluvial deposits shown in fig. 2). In the Southern Rocky Mountains physiographic province, unconsolidated alluvial aquifers consist of moderately sorted boulders, cobbles, gravel, sand, and silt. Wells completed in alluvial aquifers typically range in depth from 20 to 40 ft but may exceed 140 ft. Common yields for these wells range from 5 to 100 gal/min but can exceed 500 gal/min (U.S. Geological Survey, 1985).

Ground water in the alluvial aquifers is recharged by the melting of snow and ice and may also be recharged by rain from thunderstorms in the summer. Recharge to the alluvial aquifers is highly variable and is affected by factors such as depth, width, and permeability of the aquifer, precipitation intensity and duration, and air temperature.

STUDY DESIGN AND METHODS

This study was designed to supplement existing data in the Southern Rocky Mountains physiographic province by providing a broad overview of ground-water-quality conditions in selected alluvial aquifers. Some information on historical ground-water-quality data in the UCOL study unit was summarized by Apodaca (1998). For this study, sampling locations of alluvial wells were randomly selected in the Southern Rocky Mountains physiographic province of the UCOL study unit. Ground-water sampling sites in or near metal-mining districts were randomly selected from information on metal occurrences within mining districts of Colorado (Streufert and Cappa, 1994). Figure 1 shows the mining-affected basins in the Southern Rocky Mountains physiographic province, which includes the metal-mining districts within these basins. Ground-water-quality data were related to natural (climate, geology, and soils) and human (land use and water use) factors, where applicable. Land-use/land-cover classifications for the sampling sites were based on the predominant land use/land cover within about a 1,640-ft radius of the well location. All land-use/land-cover classifications were determined during the late 1970's (Fegeas and others, 1983) and refined with 1990 population data (Hitt, 1995). The major land-use/land-cover classifications for the sampled sites, including the sites located in or near mining districts, were forest, rangeland, and urban.

Well Selection

Wells sampled for this study were preexisting wells in alluvial aquifers in the Southern Rocky Mountains physiographic province. Well locations were obtained from the Colorado Division of Water Resources data base of permitted wells. The data base was screened by not selecting wells deeper than 200 ft and those with invalidated (denied, expired, or withdrawn) well permits. The data base was narrowed down to 3,588 existing wells. A preliminary selection of the wells was made from the Colorado Division of Water Resources digital coverage by using a geographic information system (GIS) based, stratified random selection computer program (Scott, 1990). This computer program divided the Southern Rocky Mountains physiographic province into 30 equal-area cells, and a well and several alternatives were randomly selected from each of the cells. The same data base was used to select wells in mining districts throughout the Southern Rocky Mountains physiographic province. Six drainage basins or parts of the

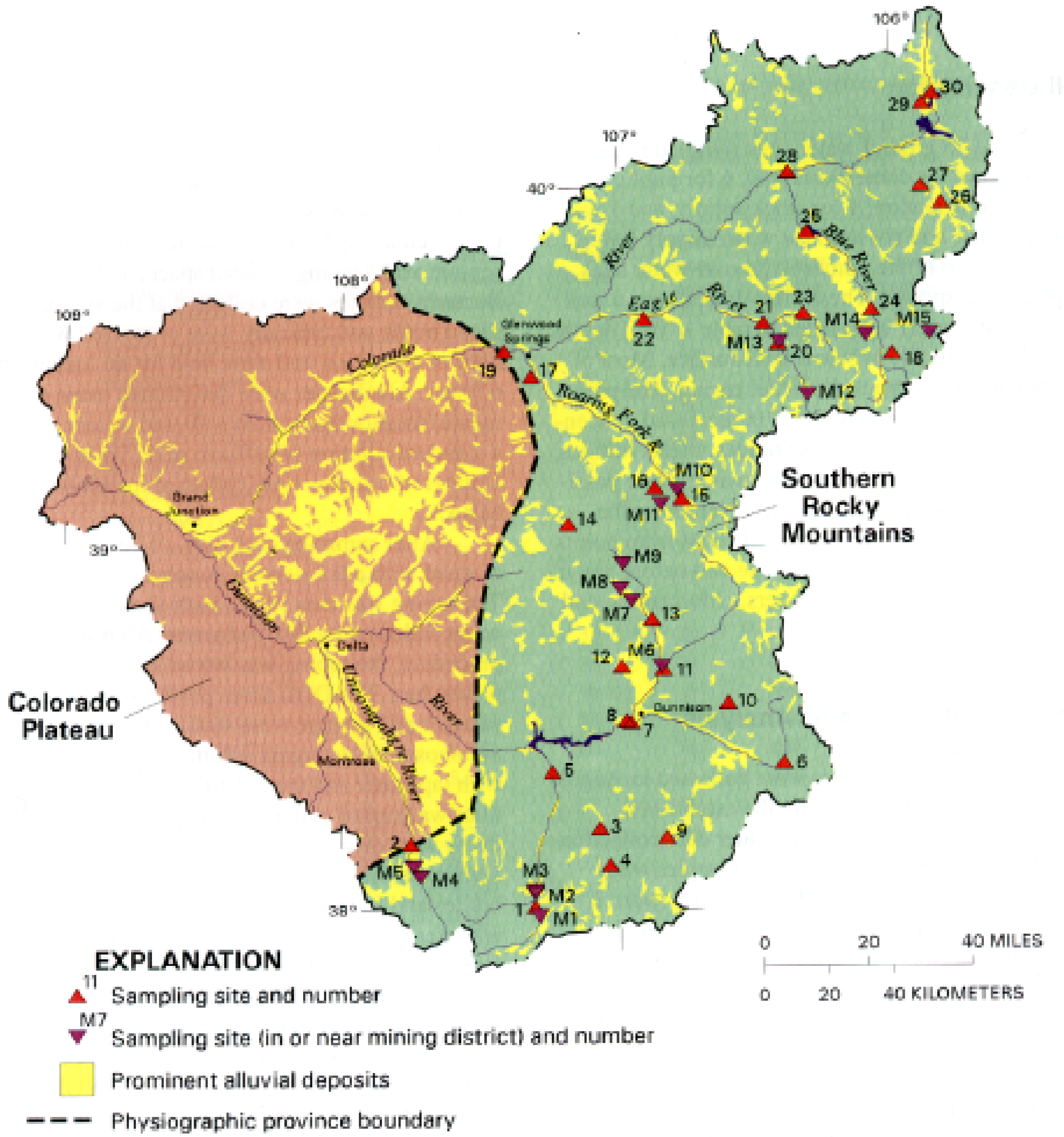

Figure 2. Alluvial deposits and sampling-site locations in the Southern Rocky Mountains physiographic province. (Distribution of alluvial deposits from Green, 1992.)

basins (Blue River, Eagle River, Roaring Fork River, East River, Lake Fork of the Gunnison River, and Uncompahgre River Basins) in the study unit were identified as being affected by past mining activities from the presence of metals (mining districts) (fig. 1).

Well-completion information was verified from driller's logs to determine if the wells were completed in alluvial aquifers. If well-completion information was not available, the well was eliminated as a prospective site. However, many of the 30 cells lacked wells having suitable well-completion information. In some instances, if a well could not be located for a particular cell, a well in the next closest adjacent cell was chosen. In spite of these efforts, wells were not found in sparsely populated areas of the study unit. USGS personnel then contacted local individuals and agencies to find suitable wells. However, in two cells wells could not be located; therefore, two springs were sampled. The spring data are not used in a statistical comparison of the data by land-use/land-cover classifications, as the geologic unit is not known. The same site-selection process was used to select wells completed in alluvial aquifers in or near mining areas.

Well Description

Of the 45 ground-water sites sampled in this study, 36 were for domestic supply, 6 for public supply, 1 for irrigation, 1 for stock supply, and 1 was for monitoring and not used for water supply (table 1 and fig. 2). Two of the domestic ground-water sites sampled were springs. These sites do not have a well depth or static water level listed in table 1. Well depths ranged from 6 to 247 ft below land surface. Most of the wells were constructed of steel casing. The presence of a steel casing may result in increased concentrations of iron and manganese oxides, metal sulfides, and dissolved metal species in the water; these possibilities should be considered when examining the water quality. All samples were collected from points as close to the well head as possible and before any in-line water treatment, such as filters, chlorinators, and water softeners.

Sample Collection and Analysis

Water-quality samples were collected in August and September 1997, following the established NAWQA guidelines for ground-water data collection (Koterba and others, 1995). Before samples were collected, wells were purged by removing approximately three casing volumes of water until field measurements (water temperature, specific conductance, dissolved oxygen, and pH) stabilized within about 5 percent for three consecutive measurements at 5-minute intervals. Samples were collected using Teflon tubing attached with stainless steel fittings to the well discharge line. At four sites in this study, because of the lack of an outside spigot, a composite (single) sample was collected, separated, and processed for the various constituents.

Samples collected for major-ion analysis consisted of filtered (0.45-µm capsule filter) and unfiltered samples. The sample collected for analysis of the cations was acidified with nitric acid to a pH of 2. Nutrient samples collected also were filtered through a 0.45-µm capsule filter and chilled. The DOC samples were collected in a stainless steel holder and filtered through a 0.45-µm silver filter and chilled. Trace-element samples were filtered through a 0.45-µm capsule filter and acidified with nitric acid to a pH of 2. Radon samples were collected by withdrawing 10 mL of water into a glass syringe and then injecting the water into a glass scintillation vial below mineral oil. Pesticide samples were filtered through a 0.7-µm glass-fiber filter in a methanol-rinsed aluminum filter assemblage, collected in 1-L baked amber bottles, and chilled. The VOC samples were unfiltered and preserved using 1:1 hydrochloric acid in a 40-mL septum vial, leaving no head space, and chilled. Bacteria samples were collected at the spigot in a sterilized bottle and typically were processed within 1 hour of collection and were held for no longer than 6 hours. Alkalinities were determined using the incremental titration method on a filtered water sample with a standard solution of sulfuric acid (Shelton, 1995). Unfiltered samples were collected for analysis of MBAS.

After sampling each site, all Teflon tubing was cleaned with a 0.1-percent nonphosphate detergent. The tubing was then rinsed with about 3 gal of tap water followed by distilled water. After the cleaning procedure, the tubing was stored in a clean, sealed plastic bag. The DOC filter, pesticide filter, and radon sampler and syringe were washed in 0.1-percent nonphosphate detergent solution, followed by rinsing with tap water and then distilled water. The pesticide filter was rinsed with pesticide-grade methanol. These items were then reassembled and wrapped in aluminum foil and stored in clean containers. Sample bottles and filtration assemblages used for bacteria analyses were washed, wrapped in craft paper, and autoclaved at 121ºC at 15 lb/in^2 for 20 minutes in the laboratory. All the equipment used for collecting and processing the bacteria samples was sterilized.

The samples were analyzed at the USGS National Water-Quality Laboratory (NWQL) for inorganic and organic constituents. The following analytical methods were used: inorganics by various methods (Fishman and Friedman, 1989; Fishman, 1993); DOC by UV-promoted persulfate oxidation and infrared spectrometry (Brenton and Arnett, 1993); radon-222 by liquid scintillation counting (American Society for Testing and Materials, 1992); pesticides by solid-phase extraction (SPE) technology on a C-18 cartridge and gas chromatography/mass spectrometry (Zaugg and others, 1995); and VOC's by purge and trap capillary gas chromatography/mass spectrometry (Rose and Schroeder, 1995).

Ground-water samples collected in the study were also analyzed for total coliform and *Escherichia coli* (*E. coli*) by using the mENDO and NA-MUG method (American Public Health Association and

Table 1. Information for ground-water sites sampled in the Southern Rocky Mountains physiographic province, 1997

[USGS, U.S. Geological Survey; ft, feet; ---, no data; na, not applicable; Water use: H, domestic; I, irrigation; P, public supply; S, stock; U, unused; Static water levels are from the driller's logs, feet below land surface; Pump type: hp, hand pump; sub, submersible; vac, vacuum pump; M, designates sites selected in mining-affected drainage basins]

Ground-water-sampling site number (fig. 2)	USGS site identification number	Water use	Altitude (ft above sea level)	Well depth (ft)	Static water level (ft)	Type of casing	Year constructed	Pump type
1	380032107180600	H	8,963	60	20	steel	1985	sub
2	381045107450800	H	7,007	60	---	steel	1910	sub
3	381339107042500	H	8,298	30	8	steel	1985	sub
4	381804107061000	H	8,799	18	14	steel	1950	vac
5	381824107113200	H	7,564	75	63	steel	1985	sub
6	382414106244900	H	8,452	41	4	steel	1990	sub
7	383109106573400	I	7,627	25	5.5	steel	1993	sub
8	383121106583000	S	7,634	20	17	steel	1945	sub
9	383236106513100	H	9,117	103	30	steel	1987	sub
10	383326106373900	H	8,614	39	10	steel	1975	sub
11	383953106503000	H	8,065	35	25	steel	1959	sub
12	384126106590200	H	8,269	36	16	steel	1964	sub
13	384815106523000	H	8,555	46	5	steel	1971	sub
14	390419107110100	H	7,972	58	18	steel	1986	sub
15	390810106463000	H	8,182	80	30	steel	1981	sub
16	391016106521000	H	8,157	75	21	steel	1974	sub
17	392850107184900	H	6,233	35	16	steel	1973	sub
18	393152106001700	H	9,381	39	16	steel	1995	sub
19	393302107242600	U	6,014	32	13	PVC	1989	none
20	393409106244300	P	8,020	87.5	13	steel	1993	sub
21	393716106281800	H	7,651	96	70	steel	1979	sub
22	393815106541900	H	6,600	102	50	steel	1986	sub
23	393844106193300	P	8,324	103	12	steel	1979	sub
24	393916106043000	P	8,731	63	6.8	steel	1984	sub
25	395220106175400	P	8,094	na	na	na	na	na
26	395658105485400	P	8,568	110	4.03	steel	1983	sub
27	395935105535800	H	8,537	115	70	steel	1968	sub
28	400229106223500	H	7,329	55	30	steel	1993	sub
29	401336105524500	H	8,760	84	60	steel	1985	sub
30	401510105503000	H	8,608	64	18	steel	1978	sub
M1	375920107173000	H	8,982	34	10	steel	1980	sub
M2	380244107181700	H	8,626	25	10	steel	1978	sub
M3	380307107181400	H	8,757	247	160	steel	1985	sub
M4	380532107425600	H	7,253	160	37	steel	1995	sub
M5	380711107444400	H	7,073	6	2	tile	1955	sub
M6	384050106511500	H	8,016	25	---	steel	1978	sub
M7	385125106571900	H	8,810	58	6	steel	1984	sub
M8	385345107002000	H	8,881	20	5	concrete	1971	sub
M9	385726106591600	H	9,436	na	na	na	na	na
M10	390421106533400	H	7,986	40	18	steel	1966	sub
M11	390737106505500	H	8,600	63	1	steel	1989	sub
M12	392510106185100	H	9,332	49	32	steel	1980	hp
M13	393334106250300	P	8,018	86	20	steel	1993	sub
M14	393459106054200	H	9,104	50	15	steel	1972	sub
M15	393813105530000	H	10,361	75	40	steel	1992	sub

others, 1992, p. 9–54 to 9–58; Britton and Greeson, 1989, p. 13–16; U.S. Environmental Protection Agency, 1991). This method allows all positive total coliform membranes to be transferred to an NA-MUG plate in order to determine if colonies are positive for *E. coli*. Unfiltered samples were analyzed for MBAS as described by Burkhardt and others (1995). Appendix 1 includes the water-quality data for all parameters and constituents measured or analyzed.

Water-Quality Standards and Health Advisories

The ground-water-quality data for all ground-water sites were compared to current (1999) USEPA drinking-water standards. Drinking-water standards include the primary (MCL), secondary (SMCL), and proposed (PMCL) USEPA maximum contaminant levels established for drinking water; maximum contaminant level goals (MCLG); drinking-water advisory (DWA); action level (AL); and health advisory (HA) standards (U.S. Environmental Protection Agency, 1996). The USEPA drinking-water standards are defined as the permissible level of a contaminant in water as delivered to users of a public water system. MCL's are health related and legally enforceable, whereas SMCL's apply to the esthetic qualities of water and are recommended nonenforceable levels. PMCL's are proposed levels that are not currently enforceable. MCLG's are nonenforceable levels of a drinking-water contaminant and are intended for protection against adverse human health effects. DWA's are intended to protect against taste and odor problems. AL's are considered the lowest level to which water systems can reasonably be required to control a contaminant should it occur in drinking water. The USEPA HA's used in this report are defined as the concentration of a contaminant in drinking water that is expected to cause adverse, but noncarcinogenic, effects over a lifetime of typical exposure. The typical exposure assumes that a 154-pound adult drinks about 0.5 gal of such water per day for 70 years (U.S. Environmental Protection Agency, 1996).

Statistical Methods

In this report, water-quality properties and constituents are represented statistically or graphically. Water-quality data were analyzed using nonparametric statistical methods. Nonparametric methods were used because they are not strongly influenced by outliers, require few assumptions about the statistical properties of a data set, and are suitable for use with small data sets.

Boxplots were used to display variability in a data set. Boxplots (for example, fig. 3) graphically represent the median, or 50th percentile (the line in the box), the interquartile range (the part of the box representing the range between the 25th and 75th percentile), and the 10th and 90th percentiles (the lines to the boundary points of the boxplot). If analytical values fall outside the 10th and 90th percentile (outliers), they are represented as circles above and below these percentile values on the boxplots. However, data sets with fewer than 10 analyses are represented as individual points on the boxplots, and a median value for the data set is represented by a line in those plots.

The Kruskal-Wallis test, a nonparametric test (Helsel and Hirsch, 1992), was used to determine whether all groups are identical or whether some tend to produce observations different in value than the others. When comparing only two groups, the Mann-Whitney test, another nonparametric test, was used to determine whether one group tends to produce larger observations than the second group. These nonparametric tests, which are like a rank-sum test, may be used to determine the general equivalence of groups of data. For attained significance levels (p-values) of less than 0.05, the tests are considered to show significant differences.

QUALITY-CONTROL SAMPLES AND QUALITY ASSURANCE OF THE DATA

In addition to the environmental ground-water samples, quality-control samples were collected to evaluate bias and variability in the environmental data. Samples used to test for bias were field equipment blanks and spiked samples. Variability was tested by obtaining replicate samples. For this study, 7 field equipment blanks (blank samples), 6 replicates, and 8 field-spike samples were collected. Blank samples were collected to test for bias from the introduction of contamination into the environmental samples in any stage of the sample collection and analysis process including decontamination procedures of the field equipment, field and laboratory protocols, and other procedures. Water used for collecting the blank sample consisted of water that is essentially free of the analytes of interest; analyte concentrations in the blank water are documented by the NWQL. The constituents detected in the blank water, blank samples, and environmental samples are listed in table 2.

Sodium was the only major ion where the concentrations in the blank samples were greater than 10 percent of the minimum concentration in the environmental samples. Sodium concentrations in the environmental sample may be affected by the sampling and preservation methods. Nutrients detected were at the same concentrations for the blank samples and the environmental samples (minimum concentration), except for nitrate. Concentrations of nitrate in the blank samples that are higher than the minimum concentration of the environmental samples may result in overreported concentrations in the environmental samples. Aluminum and zinc concentrations were also higher in the blank samples than the minimum concentrations of the environmental samples, which again may result in overreported concentrations in the environmental samples. The most commonly detected VOC's in the blank samples were 1,2,4-trimethylbenzene and tetrachloroethylene (table 2). The frequency at which these VOC's were detected may affect the concentrations or number of detections of these compounds in the environmental samples. The concentrations of the VOC's detected in the blank samples were estimated concentrations. Estimated concentrations are below the reporting limit, which results in a decreased confidence in the concentration of a particular constituent. DOC concentrations detected in the blank water were less than 1.0 mg/L, which indicates that the concentrations are not affected by the sampling and processing methods.

Replicate samples were collected for all constituents (table 3) to assess measurement variability. Replicate samples are collected after the environ-

Table 2. Summary statistics for constituents detected in the blank quality-control samples and in the environmental samples

[<, less than; E, estimated value]

Constituent	Number of field blank detections/ analyses	Median concentration detected in blank water	Median concentration detected in blank samples	Maximum concentration detected in blank samples	Minimum concentration detected in environmental samples
Major ions, in milligrams per liter					
Calcium	2/7	<0.006	0.61	1.15	15.8
Magnesium	1/7	<0.01	0.03	0.03	1.34
Silica	2/7	0.30	0.25	0.27	6.07
Sodium	1/7	0.02	0.53	0.53	1.68
Nutrients, in milligrams per liter					
Ammonia, as N	1/7	<0.002	0.02	0.02	0.02
Nitrate plus nitrite, as N	2/7	<0.005	0.07	0.09	0.05
Orthophosphate, as P	1/7	<0.001	0.01	0.01	0.01
Trace elements, in micrograms per liter					
Aluminum	7/7	3	5	8	3
Zinc	3/7	<0.5	1	7	1
Volatile organic compounds, in micrograms per liter					
1,2,4-Trimethylbenzene	5/7	<0.05	E 0.009	E0.03	E0.004
Benzene	2/7	<0.05	E0.021	E0.032	E0.007
Chloroform	2/7	<0.05	E0.009	E0.01	E0.01
Tetrachloroethylene	3/7	<0.05	E0.008	E0.01	E0.005
Other organics, in milligrams per liter					
Dissolved organic carbon	2/7	<0.1	0.3	0.5	0.2

Table 3. Summary statistics of replicate- and field-spike quality-control samples

[SH, U.S. Geological Survey National Water Quality Laboratory schedule; relative percent difference is defined as [(sample 1 – sample 2)/(sample1 + sample 2/2)] × 100]

Constituent	Number of compari-sons	Minimum	Median	Maximum
Environmental sample replication (relative percent difference)				
Major ions	60	0.00	1.38	48.5
Nutrients	36	0.00	0.00	98.3
Trace elements	108	0.00	0.00	71.4
Radon	6	0.68	8.47	15.7
Dissolved organic carbon	6	0.00	9.45	31.6
Pesticides SH-2001	235	0.00	0.00	84.4
Volatile organic compounds	425	0.00	0.00	161
Field-spike recoveries (in percent)				
Pesticides SH-2001	188	0.00	108	220
Volatile organic compounds	340	34.4	89.6	285
Field-spike replication (relative percent difference)				
Pesticides SH-2001	94	0.00	3.16	12.1
Volatile organic compounds	170	0.00	6.54	21.8

mental samples by following the same sampling and preservation procedures. The percent difference between the initial sample and replicate sample could indicate problems with the sampling or analytical procedures or possible changes in the chemical composition of the water being sampled. The percent difference for most constituents was relatively small (median values less than 1.5 percent) and generally less than 5 percent for most of the constituents detected in a particular sample. A high percent difference of greater than 5 percent occurred when one sample had a low concentration and the other was at the reporting limit or was not detected. No qualifications were made to the environmental data based on replicate quality-control data.

Field-spike and field-spike-replicate samples were collected for pesticides and VOC's to determine the bias and variability resulting from interactions between the analytes of interest and the ground-water chemistry. Spike solutions are composed of known quantities of either pesticides or VOC’s, which were added to the environmental and replicate samples. Table 3 shows the field-spike recoveries for pesticides and VOC’s in percent and in relative percent difference between replicate spike samples. Surrogates, compounds that behave similarly to the analytes, were also added to every pesticide and VOC environmental and quality-control sample.

Median concentrations and median percent recoveries for all pesticides and VOC’s present in the field spikes are listed in table 4. For pesticides, the percent recoveries were higher than the VOC’s and had a median concentration of 108 percent for all pesticide constituents (table 3). Only one pesticide constituent had a percent recovery of less than 50 percent: permethrin-cis (42 percent) (table 4). The percent recoveries for VOC’s were generally less than 100 percent and had a median percent recovery of 89.6 percent for all constituents (table 3). Of the 86 VOC’s analyzed, only two VOC’s had a percent recovery of less than 50 percent: 1,2,3,4-tetramethylbenzene (0 percent) and ethyl methacrylate (49 percent) (table 4). Relative percent difference in the field spikes was generally less than 10 for all constituents analyzed in the pesticide and VOC spikes. For this study, the relative percent differences in the field spikes of less than 10 are considered acceptable results.

Results of the surrogate recoveries for pesticides and VOC’s for all environmental and quality-control samples show that VOC surrogate recoveries ranged

Table 4. Percent recoveries and median concentrations for individual constituents in the pesticide and volatile organic field spikes

[USGS, U.S. Geological Survey; NWIS, National Water Information System data base; n, number of analyses; µg/L, micrograms per liter]

Constituent	USGS NWIS parameter code	Median concentration (n=4) (µg/L)	Percent recovery of median concentration
PESTICIDES			
2,6-Diethylaniline	82660	0.10	111
Acetochlor	49260	0.12	120
Alachlor	46342	0.12	118
Atrazine	39632	0.11	113
Azinophos, methyl-	82686	0.05	51
Benfluralin	82673	0.08	80
Butylate	04028	0.11	105
Carbaryl	82680	0.15	150
Carbofuran	82674	0.16	172
Chloropyrifos	38933	0.10	96
Cyanazine	04041	0.13	138
DCPA (Dacthal)	82682	0.12	114
Deethylatrazine	04040	0.06	55
DDE, p,p'	34653	0.07	63
Diazinon	39572	0.11	118
Dieldrin	39381	0.10	106
Disulfoton	82677	0.10	84
EPTC (Eptam)	82668	0.10	110
Ethalfluralin	82663	0.10	96
Ethoprophos	82672	0.12	132
Fonofos	04095	0.10	101
HCH,alpha-	34253	0.10	112
Lindane	39341	0.10	100
Linuron	82666	0.15	152
Malathion	39532	0.09	83
Metolachlor	39415	0.12	123
Metribuzin	82630	0.11	114
Molinate	82671	0.11	116
Napropamide	82684	0.11	107
Parathion	39542	0.12	117
Parathion, methyl-	82667	0.11	112
Pebulate	82669	0.11	103
Pendimethalin	82683	0.10	97
Permethrin-cis	82687	0.02	42
Pendimethalin	82683	0.10	97
Permethrin-cis	82687	0.02	42
Phorate	82664	0.09	94
Prometon	04037	0.10	93
Propachlor	04024	0.13	123
Propanil	82679	0.11	122
Propargite	82685	0.11	112
Propyzamide	82676	0.11	110
Simazine	04035	0.11	106
Tebuthiuron	82670	0.15	140
Terbacil	82665	0.12	120

Table 4. Percent recoveries and median concentrations for individual constituents in the pesticide and volatile organic field spikes—Continued

[USGS, U.S. Geological Survey; NWIS, National Water Information System data base; n, number of analyses; µg/L, micrograms per liter]

Constituent	USGS NWIS parameter code	Median concentration (n=4) (µg/L)	Percent recovery of median concentration
PESTICIDES—Continued			
Terbufos	82675	0.09	78
Thiobencarb	82681	0.11	110
Triallate	82678	0.11	119
Trifluralin	82661	0.09	100
VOLATILE ORGANIC COMPOUNDS			
1, 1, 1, 2-Tetrachloroethane	77562	0.46	84
1, 1, 1-Trichloroethane	34506	0.50	94
1, 1, 2, 2-Tetrachloroethane	34516	1.37	95
1, 1, 2-Trichloroethane	34511	0.61	92
1, 1, 2-Trichlorotrifluoroethane	77652	0.48	90
1, 1-Dichloroethane	34496	0.74	96
1, 1-Dichloroethylene	34501	0.58	107
1, 1-Dichloropropene	77168	0.52	98
1, 2, 3, 4-Tetramethylbenzene	49999	0.00	0
1, 2, 3, 5-Tetramethylbenzene	50000	5.11	94
1, 2, 3-Trichlorobenzene	77613	2.62	98
1, 2, 3-Trichloropropane	77443	0.67	85
1, 2, 3-Trimethylbenzene	77221	1.26	95
1, 2, 4-Trichlorobenzene	34551	1.76	83
1, 2, 4-Trimethylbenzene	77222	0.58	95
1, 2-Dibromo-3-chloropropane	82625	2.06	88
1, 2-Dibromomethane	77651	0.49	92
1, 2-Dichlorobenzene	34536	0.49	89
1, 2-Dichloroethane	32103	1.39	96
1, 2-Dichloropropane	34541	0.70	91
1, 3, 5-Trimethylbenzene	77226	0.47	86
1, 3-Dichlorobenzene	34566	0.53	85
1, 3-Dichloropropane	77173	1.27	96
1, 4-Dichlorobenzene	34571	0.47	84
2, 2-Dichloropropane	77170	0.60	65
2-Butanone	81595	16.40	89
2-Chlorotoluene	77275	0.47	85
2-Hexanone	77103	8.26	100
3-Chloropropene	78109	0.95	83
4-Chlorotoluene	77277	0.56	83
4-Isopropyl-1-methylbenzene	77356	1.04	85
4-Methyl-2-pentanone	78133	3.51	85
Acetone	81552	20.75	79
Acrolein	34210	6.55	50
Acrylonitrile	34215	9.32	93
Benzene	34030	0.49	91
Bromobenzene	81555	0.46	85
Bromochloromethane	77297	0.48	88
Bromodichloromethane	32101	0.52	94
Bromoform	32104	1.01	90

Table 4. Percent recoveries and median concentrations for individual constituents in the pesticide and volatile organic field spikes—Continued

[USGS, U.S. Geological Survey; NWIS, National Water Information System data base; n, number of analyses; µg/L, micrograms per liter]

Constituent	USGS NWIS parameter code	Median concentration (n=4) (µg/L)	Percent recovery of median concentration
VOLATILE ORGANIC COMPOUNDS—Continued			
Bromomethane	34413	1.57	94
Butylbenzene	77342	1.64	77
Carbon disulfide	77041	2.22	107
Chlorobenzene	34301	0.48	91
Chloroethane	34311	1.11	83
Chloroform	32106	0.49	88
Chloromethane	34418	3.14	115
Dibromochloromethane	32105	1.91	96
Dibromomethane	30217	0.52	93
Dichlorodifluoromethane	34668	1.84	174
Dichloromethane	34423	4.58	110
Diethyl ether	81576	2.04	89
Diisopropyl ether	81577	1.00	90
Ethyl methacrylate	73570	2.48	49
Ethyl-tert-butyl ether	50004	0.47	84
Ethylbenzene	34371	0.48	91
Hexachlorobutadiene	39702	1.37	87
Hexachloroethane	34396	3.21	79
Isopropylbenzene	77223	0.48	89
Methyl acrylate	49991	6.25	94
Methyl acrylonitrile	81593	5.73	89
Methyl iodide	77424	0.77	87
Methyl methacrylate	81597	3.91	79
Napthalene	34696	3.16	116
Propylbenzene	77224	0.46	84
Styrene	77128	0.51	94
Tetrachloroethylene	34475	1.25	113
Tetrachloromethane	32102	0.84	84
Tetrahydrofuran	81607	6.05	70
Toluene	34010	0.50	92
Trichloroethylene	39180	0.50	91
Trichlorofluoromethane	34488	1.02	103
Vinyl bromide	50002	1.18	108
Vinyl chloride	39175	1.53	129
cis-1, 2-Dichloroethylene	77093	0.51	94
cis-1, 3-Dichloropropene	34704	0.85	84
m- and p-Xylene	85795	1.22	99
o-Ethyl toluene	77220	0.98	88
o-Xylene	77135	0.62	100
sec-Butylbenzene	77350	0.25	66
tert-Butyl methyl ether	78032	1.08	88
tert-Butylbenzene	77353	0.95	86
tert-Pentyl methyl ether	50005	1.02	82
trans-1, 2-Dichloroethylene	34546	0.54	102
trans-1, 3-Dichloropropene	34699	1.24	85
trans-1, 4-Dichloro-2-butene	73547	6.01	76

from about 95 to 103 percent and that pesticide surrogate recoveries were more variable. Surrogate recovery rates for pesticides ranged from about 87 to 118 percent. No qualifications were made to the environmental data based on the spike or surrogate recoveries. However, relatively low recoveries of a compound can indicate that its presence and concentration may be underreported.

The major-ion data were quality assured by examining the differences between the total-cation and total-anion charge balance. Differences between total-cation and total-anion charge balance for all 45 environmental samples were less than 10 percent. About 7 percent of the samples (3 of 45) had a difference between the cation and anion charge balance of greater than 2 percent. Either very low dissolved constituents (such that some constituents are near the reporting limit) or high dissolved constituents (such that a high concentration of a particular constituent is present) can account for large percentage differences in the cation and anion charge balance for the three sites. A difference between the total-cation and the total-anion concentrations of less than 10 percent is considered acceptable for this study.

GROUND-WATER QUALITY

Many natural and human factors can affect ground-water quality. Natural factors affecting ground-water quality include the source of the recharge water, the weathering and dissolution of minerals from various geologic units, cation-anion exchange with aquifer minerals, and the mixing of waters from different sources. Human factors that affect water quality may include the introduction of nutrients and synthetic organic compounds because of leaching into the ground water of fertilizers and pesticides, which are applied on the surface (U.S. Geological Survey, 1999). Also, areas of intense irrigation may affect the amount of dissolved solids present in the ground water. Trace elements in ground water may occur naturally from the dissolution of minerals or may be related to mining activities, urban development, application of pesticides, or burning of fossil fuels. Bacteria in ground water may be an indication of the sanitary quality of the water (Myers and Sylvester, 1997). The presence of methylene blue active substances in ground water may be an indication of contamination from wastewater (Field and others, 1992).

Ground-water-quality data are given in Appendix 1, and summary statistics are provided in table 5 for properties and constituents measured or analyzed. All sites located in a mining-affected drainage basin (figs. 1 and 2; sites M1–M15 and sites 1, 2, 11, 13, 15, 16, 18, and 20) were assumed to be associated with mining activities for statistical analysis of the data. For this report, all of the data have been summarized together because no significant differences were observed for most of the constituents between the mining sites (23 sites) and sites not associated with mining activities (22 sites). The four constituents (chloride, DOC, potassium, and silica) that had p-values of less than 0.05 from the Mann-Whitney test showed higher concentrations in sites not associated with mining activities.

Field Parameters

Water temperature, specific conductance, dissolved oxygen, pH, turbidity, and alkalinity were measured in the field (table 5; Appendix 1). The highest measurements of specific conductance (2,810 and 6,650 μS/cm) were from sites in areas where sedimentary rocks are exposed, such as in the northwestern part of the Southern Rocky Mountains physiographic province. Dissolved-oxygen concentrations of less than 1 mg/L, indicating reduced conditions, were measured in about 11 percent of the samples (5 of 44). Under reduced conditions, ions such as iron and manganese are more soluble in the ground water (Hem, 1992). Field pH values were below the USEPA SMCL range of 6.5 to 8.5 (U.S. Environmental Protection Agency, 1996) in about 4 percent of the samples (2 of 45).

Turbidity (cloudiness of the water) has no health effects but can interfere with disinfection of the water and also provides a medium for microbial growth (U.S. Environmental Protection Agency, 1996). The USEPA (U.S. Environmental Protection Agency, 1996) requires that turbidity for public-supply water does not exceed 5 NTU; also, systems that filter must ensure that the turbidity does not exceed 1 NTU for at least 95 percent of the daily samples for two consecutive months. About 5 percent of the samples (2 of 43) exceeded the turbidity value of 5 NTU; one of these

Table 5. Summary statistics for water-quality properties and constituents analyzed or measured for all sites sampled in the Southern Rocky Mountains physiographic province

[USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; NWIS, National Water Information System; ^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; cols/100 mL, colonies per 100 mL; na, not applicable; <, less than; E, estimated value; MCL, maximum contaminant level; SMCL, secondary maximum contaminant level; PMCL, proposed maximum contaminant level; MCLG, maximum contaminant level goal; DWA, drinking-water advisory; AL, action level; HA, health advisory; ---, no data]

Constituent or property	Number of detections/ samples	USGS NWIS parameter code	Reporting limit	USEPA drinking-water standards or health advisories[1]	Minimum	Median	Maximum
FIELD PARAMETERS							
Water temperature (^{o}C)	45/45	00010	na	---	5.0	10.0	14.6
Specific conductance (µS/cm)	45/45	00095	na	---	57	281	6,650
Oxygen, dissolved (mg/L)	44/44	00300	na	---	0.1	2.9	6.0
pH, field (standard units)	45/45	00400	na	6.5-8.5 (SMCL)	6.1	7.2	8.1
Turbidity (NTU)	43/43	00076	na	5.0	0.1	0.6	50
Alkalinity (mg/L as $CaCO_3$)	45/45	90410	na	---	9	147	648
INORGANICS							
Hardness, total (mg/L as $CaCO_3$)	45/45	00900	computed	---	20	140	3,400
Dissolved solids (mg/L)	45/45	70300	computed	500 (SMCL)	42	170	6,726
Major ions, in milligrams per liter Sample filtered through 0.45-micrometer filter							
Bicarbonate (mg/L as HCO_3)	45/45	00453	na	---	5	79	362
Bromide	31/45	71870	0.01	---	< 0.01	0.02	0.83
Calcium	45/45	00915	0.02	---	5.79	45.5	516
Chloride	45/45	00940	0.10	250 (SMCL)	0.17	1.14	281
Fluoride	37/45	00950	0.10	4.0 (MCL)	< 0.10	0.19	1.32
Magnesium	45/45	00925	0.01	---	1.31	6.57	523
Potassium	45/45	00935	0.10	---	0.24	1.39	31.5
Silica	45/45	00955	0.01	---	6.07	13.5	47.5
Sodium	45/45	00930	0.20	---	1.68	5.78	502
Sulfate	45/45	00945	0.10	250 (SMCL)	0.79	20.1	3,728
Nutrients, in milligrams per liter Sample filtered through 0.45-micrometer filter							
Ammonia, as N	10/45	00608	0.02	30 (HA)	<0.02	<0.02	0.53
Ammonia plus organic, as N	2/45	00623	0.20	---	<0.20	<0.20	0.62
Nitrate plus nitrite, as N	41/45	00631	0.05	10 (MCL)	<0.05	0.25	6.3
Orthophosphate, as P	25/45	00671	0.01	---	<0.01	<0.01	0.23
Phosphorus, as P	17/45	00666	0.01	---	<0.01	<0.01	0.23
Trace elements, in micrograms per liter Sample filtered through 0.45-micrometer filter							
Aluminum	45/45	01106	1.0	50-200 (SMCL)	2.7	6.2	19
Arsenic	10/45	01000	1.0	50 (MCL)	<1.0	<1.0	3.5
Barium	44/45	01005	1.0	2,000 (MCL)	<1.0	37	267
Chromium	27/45	01030	1.0	100 (MCL)	<1.0	1.3	12
Copper	38/45	01040	1.0	1,300 (AL)	<1.0	6.4	2,042
Iron	30/45	01046	3.0	300 (SMCL)	<3.0	12	7,439
Lead	5/45	01049	1.0	15 (AL)	<1.0	<1.0	3.4
Manganese	24/45	01056	1.0	50 (SMCL)	<1.0	1.3	1,622

Table 5. Summary statistics for water-quality properties and constituents analyzed or measured for all sites sampled in the Southern Rocky Mountains physiographic province

[USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; NWIS, National Water Information System; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; cols/100 mL, colonies per 100 mL; na, not applicable; <, less than; E, estimated value; MCL, maximum contaminant level; SMCL, secondary maximum contaminant level; PMCL, proposed maximum contaminant level; MCLG, maximum contaminant level goal; DWA, drinking-water advisory; AL, action level; HA, health advisory; ---, no data]

Constituent or property	Number of detections/ samples	USGS NWIS parameter code	Reporting limit	USEPA drinking-water standards or health advisories[1]	Minimum	Median	Maximum
Trace elements, in micrograms per liter Sample filtered through 0.45-micrometer filter—Continued							
Molybdenum	22/45	01060	1.0	---	<1.0	<1.0	16
Nickel	13/45	01065	1.0	100 (MCL)	<1.0	<1.0	41
Selenium	6/45	01145	1.0	50 (MCL)	<1.0	<1.0	11
Uranium	22/45	22703	1.0	20 (PMCL)	<1.0	<1.0	34
Zinc	44/45	01090	1.0	5,000 (SCML)	<1.0	24	1,272
Radionuclides, in picocuries per liter							
Radon-222	45/45	82303	26	---	305	1,102	4,030
ORGANICS							
Dissolved organic carbon (mg/L)	45/45	00681	0.1	---	0.2	0.6	8.7
Pesticides, in micrograms per liter Sample filtered through 0.7-micrometer filter							
Deethylatrazine	1/32	04040	0.002	---	<0.002	<0.002	E0.004
Prometon	1/32	04037	0.018	100 (HA)	E0.003	<0.018	<0.018
Volatile organic compounds, in micrograms per liter							
1, 1, 1-Trichloroethane	6/32	34506	0.032	200 (MCL)	E0.010	<0.032	0.95
1, 2, 4-Trimethylbenzene	13/32	77222	0.056	---	E0.004	<0.056	0.198
1, 3-Dichlorobenzene	2/32	34566	0.054	600 (HA)	E0.008	<0.054	0.100
2-Butanone	1/32	81595	1.650	---	<1.650	<1.650	1.680
Acetone	1/32	81552	4.900	---	<4.904	<4.904	<5.000
Benzene	5/32	34030	0.032	5.0 (MCL)	E0.007	<0.032	<0.032
Carbon disulfide	5/32	77041	0.080	---	E0.010	<0.080	<0.080
Chloroform	2/32	32106	0.052	100 (MCL)	E0.010	<0.052	<0.052
Chloromethane	3/32	34418	0.254	3.0 (HA)	E0.010	<0.254	<0.254
Dichlorodifluoromethane	1/32	34668	0.096	1,000 (HA)	<0.096	<0.096	E0.100
Methyl tert-butyl ether	2/32	78032	0.112	20-40 (DWA)	<0.112	<0.112	1.47
Styrene	1/32	77128	0.042	100 (MCL)	E0.010	<0.042	<0.042
Tetrachloroethylene	15/32	34475	0.038	5.0 (MCL)	E0.005	<0.038	0.117
Tetrachloromethane	1/32	32102	0.088	5.0 (MCL)	E0.020	<0.088	<0.088
Tetrahydrofuran	3/32	81607	1.150	---	E0.100	<1.148	11.30
Toluene	4/32	34010	0.038	1,000 (MCL)	E0.004	<0.038	E0.060
Trichloroethylene	3/32	39180	0.038	5.0 (MCL)	E0.008	<0.038	0.177
m- and p-Xylene	1/32	85795	0.064	---	E0.030	<0.064	<0.064
o-Xylene	1/32	77135	0.064	---	E0.020	<0.064	<0.064
OTHER CONSTITUENTS							
Coliforms, total, m-ENDO medium (cols/100 mL)	45/45	31501	0	0 (MCLG)	<1	<1	60
Methylene blue active substances (mg/L)	45/45	38260	0.02	---	<0.02	<0.02	0.04

[1]U.S. Environmental Protection Agency, 1996.

samples was from the monitoring well (site 19; Appendix 1).

Major Ions

Water samples were analyzed for the following major ions: bicarbonate, bromide, calcium, chloride, fluoride, magnesium, potassium, silica, sodium, and sulfate (Appendix 1). Summary statistics for the major ions and USEPA drinking-water standards are listed in table 5. The highest median concentrations in ground water for this study were for bicarbonate, followed by calcium, sulfate, silica, magnesium, sodium, potassium, and chloride.

Bicarbonate occurs naturally in ground water and is typically a dominant anion. Calcium is a major component of solutes in most natural waters (Hem, 1992). Calcium concentrations generally were greater than most of the other major ions. Calcium in ground water generally is a result of the dissolution of carbonate minerals such as calcite and dolomite and also may be related to the dissolution of silicate minerals. Calcium in drinking water has no health effects but contributes to the hardness of water. The two sites (sites 19 and 22) that had a total hardness of greater than 1,000 mg/L also had the highest calcium concentrations.

Sulfate in ground water can result from the oxidation of sulfide minerals in igneous and sedimentary rocks and evaporites (Hem, 1992). The SMCL for sulfate of 250 mg/L (U.S. Environmental Protection Agency, 1996) was exceeded at about 9 percent of the sites (4 of 45). Silica in ground water generally is from the weathering of quartz, which is a major mineral found in igneous rocks and sandstones.

Magnesium is a common element in ground water. Magnesium is a major constituent of ferromagnesian minerals in igneous rocks or in metamorphic rocks as alteration products of ferromagnesian minerals. Magnesium also is present in sedimentary rocks such as dolomite. The median concentration for magnesium was less than that of calcium, by a factor of seven (table 5). Magnesium and calcium have similar effects on the hardness of the water.

Sources of sodium are from natural deposits, road salt, or water softeners. Potassium is slightly less common than sodium in igneous rocks but more abundant than sodium in all sedimentary rocks (Hem, 1992). Chloride is present in natural water, but generally at low concentrations, and also may be present because of human activities. Chloride concentrations greater than 250 mg/L may make drinking water taste salty. At one site (site 19; appendix 1), the chloride concentration exceeded the USEPA SMCL standard of 250 mg/L (U.S. Environmental Protection Agency, 1996).

Chloride and sulfate concentrations for samples from the drinking-water wells (42 sites; excludes the 2 springs and 1 monitoring well) were represented on boxplots, and differences in concentrations were examined using the Kruskal-Wallis test to determine if concentrations were statistically different among forest, rangeland, and urban land-use/land-cover classifications (figs. 3*A* and 3*B*). A p-value of 0.09 was obtained from the Kruskal-Wallis test for the comparison of chloride concentrations by land-use/land-cover classifications. This difference between the land-use/land-cover classifications can be seen in the median concentrations where sites in the urban land-use areas had a higher median concentration (7.4 mg/L) than the forest (1.0 mg/L) and the rangeland (1.5 mg/L) areas (fig. 3*A*). Higher median concentrations in the urban setting may be related to natural sources or human sources (such as the use of road salt). Sulfate concentrations also were represented in boxplots (fig. 3*B*) by land-use/land-cover classification, and for all drinking-water sites (42 sites) the Kruskal-Wallis test showed no significant difference between the land-use/land-cover classifications (p-value = 0.96).

The USEPA SMCL for dissolved solids (500 mg/L) (U.S. Environmental Protection Agency, 1996) was exceeded in about 13 percent of the samples (6 of 45). The highest dissolved-solids concentration was from the monitoring well (site 19, Appendix 1). Dissolved-solids concentrations at sampling sites are shown on a geologic map of the Southern Rocky Mountains physiographic province in figure 4. As with specific conductance, higher dissolved-solids concentrations generally are found where sedimentary rocks are exposed, such as in the northwestern part of the Southern Rocky Mountains physiographic province. Differences in dissolved-solids concentrations for land-use/land-cover classifications for samples from the drinking-water wells (42 wells) showed no statistical difference using the Kruskal-Wallis test (p-value = 0.41) among the forest, rangeland, and urban settings (fig. 3*C*). However, median concentrations for

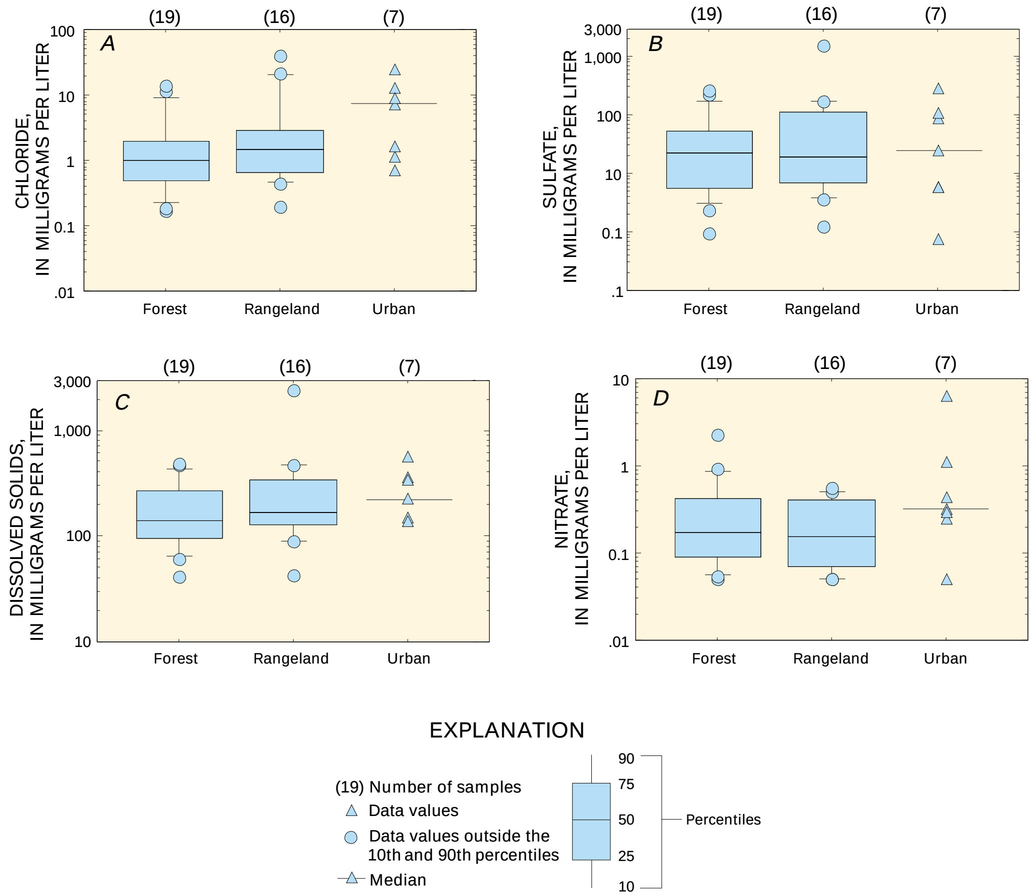

Figure 3. Distribution of (*A*) chloride, (*B*) sulfate, (*C*) dissolved-solids, and (*D*) nitrate concentrations by land-use/land-cover classifications for the drinking-water wells.

urban settings were higher (225 mg/L) than for forest (139 mg/L) and rangeland (168 mg/L) (fig. 3*C*).

Water composition in the alluvial aquifers of the study unit can vary widely as a result of differences in the underlying and surrounding geology. Trilinear diagrams are a means of generally indicating similarities and differences in the composition of water from certain geologic units (Freeze and Cherry, 1979). Percentages of the total milliequivalents per liter of the predominant cations (lower left triangle) and anions (lower right triangle) are shown in figure 5. The center diagram shows the combined cation and anion composition of the water, which is derived from projecting the data from the cation and anion plots.

The water compositions for sites sampled as part of this study that were not identified as mining sites (table 1) are calcium (Ca), magnesium (Mg), and bicarbonate (HCO_3) waters. The mining sites include the sites sampled specifically for mining and eight additional sites sampled in or near the mining districts (fig. 2; sites M1–M15 and sites 1, 2, 11, 13, 15, 16, 18, and 20). A few samples from water-quality sites located in the northwestern part of the Southern Rocky Mountains physiographic province where sedimentary rocks are exposed and evaporite strata are present have some sulfate (SO_4) dominated waters (fig. 2, sites 19 and 22; Appendix 1); however, sulfate-dominant waters are more common in the sites sampled in or near mining areas. For the 23 sites located in or near mining districts (table 1), the waters are Ca, Mg, and HCO_3.

Nutrients and Dissolved Organic Carbon

Nutrients in ground water can originate from various sources (such as atmospheric deposition or dissolution of geologic materials); however, elevated concentrations in ground water may be related to human activities, such as septic systems or agricultural practices. In ground water, the nutrients of concern are

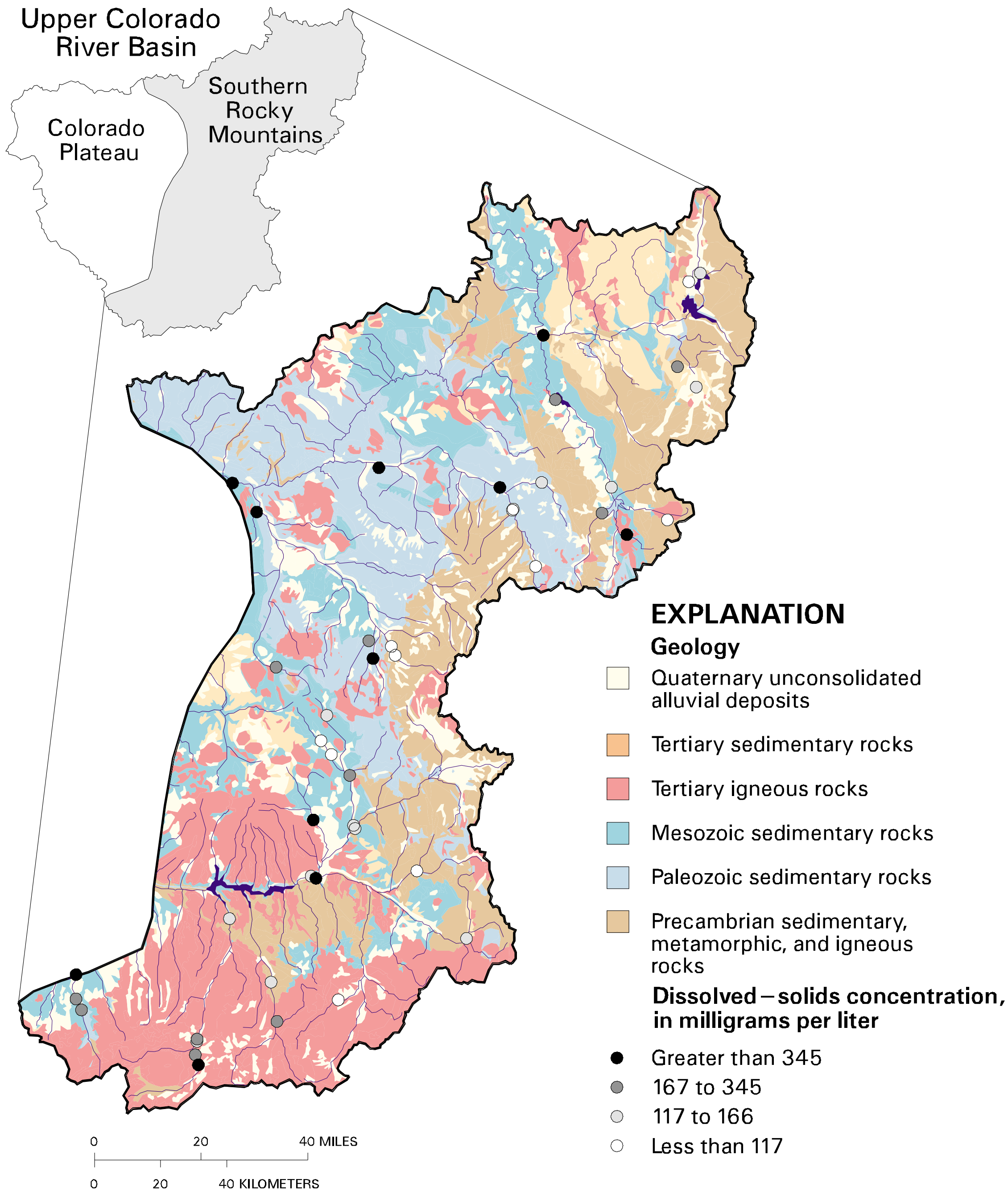

Figure 4. Dissolved-solids concentrations for sites sampled in the Southern Rocky Mountains physiographic province. (Geology modified from Green, 1992; Tweto, 1979.)

nitrate and phosphorus. Nitrate concentrations that exceed the USEPA 10-mg/L MCL for drinking water can cause “blue-baby syndrome” (methemoglobinemia) (U.S. Environmental Protection Agency, 1996). In this study, concentrations of nitrate plus nitrite as N are reported. The concentrations of nitrite were all less than 0.1 mg/L (table 5); therefore, the concentrations of nitrate plus nitrite will hereinafter be referred to as nitrate. None of the samples collected for this study had a concentration greater than the 10-mg/L MCL for nitrate (table 5); however, the concentration at one site (M15) was greater than 3 mg/L, which may indicate that human activities are affecting the water quality (Madison and Brunett, 1985) at this site.

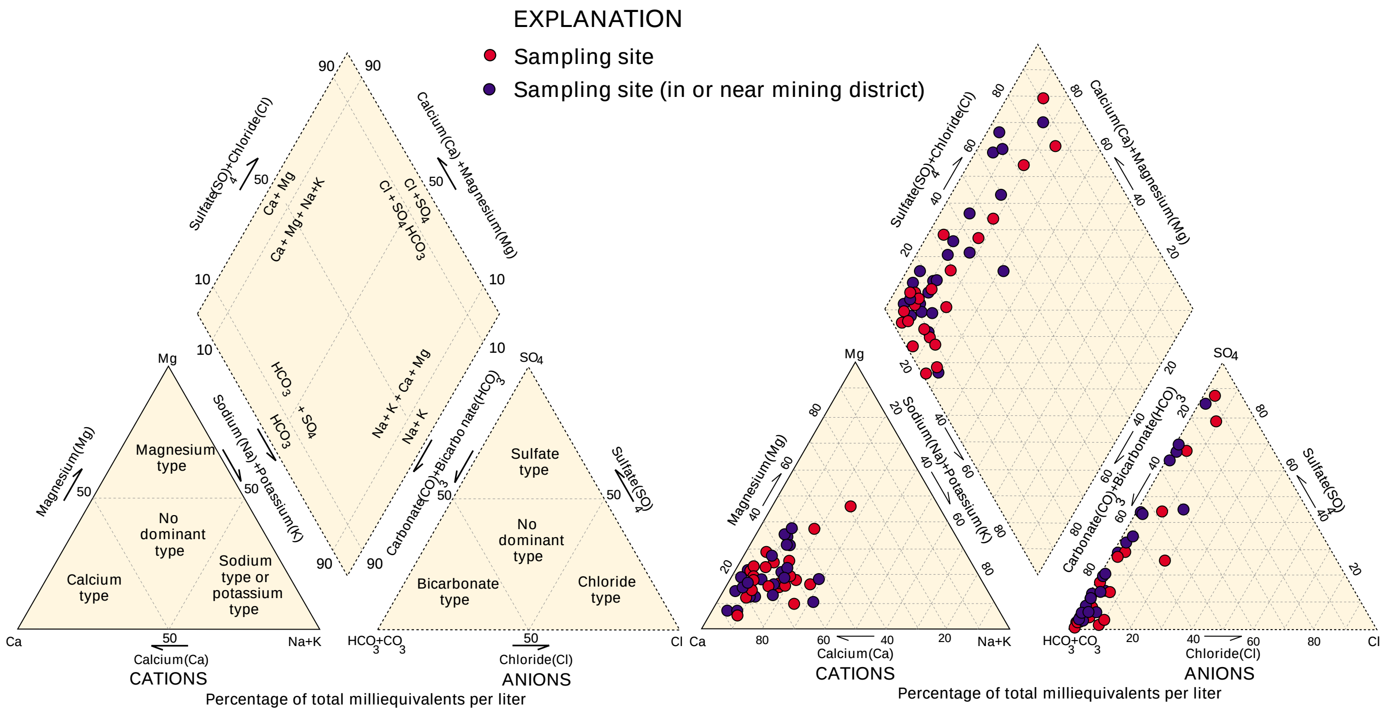

Figure 5. Major-ion composition of ground-water samples collected in the Southern Rocky Mountains physiographic province.

Concentrations of nutrients also can be affected by other land-use practices. Boxplots were constructed to show the distribution of nitrate concentrations in samples from the drinking-water wells (42 sites) by forest, rangeland, and urban land-use/land-cover classifications (fig. 3*D*). The Kruskal-Wallis test showed that the distribution in concentrations among these land-use/land-cover classifications for nitrate was not significantly different (p-value = 0.30). However, the median concentration for the urban setting (0.32 mg/L) was slightly higher than for forest (0.17 mg/L) and rangeland (0.15 mg/L).

Because ground water can discharge into surface water and can contain elevated phosphorus concentrations, these combined conditions may accelerate the process of eutrophication in rivers and lakes. Eutrophication (increased algae as a result of elevated nutrient concentrations) can result in the death of fish and other aquatic organisms. To control eutrophication, the USEPA recommends that total phosphorus concentrations should not exceed 0.1 mg/L for flowing waters that do not discharge directly into a lake or reservoir (U.S. Environmental Protection Agency, 1986). Phosphorus concentrations were greater than 0.1 mg/L in about 7 percent of the ground-water sites (3 of 45) and orthophosphate concentrations were greater than or equal to 0.1 mg/L in about 11 percent of the ground-water sites (5 of 45).

Another nutrient detected in the samples was ammonia, which ranged in concentration from less than 0.02 to 0.53 mg/L (Appendix 1); the median concentration for ammonia was less than 0.02 mg/L (table 5). Ammonium ions are a reduced form of nitrogen and are present in ground water under anoxic conditions (dissolved-oxygen concentrations of less than 1.0 mg/L).

Dissolved organic carbon was detected at all sites, ranged in concentration from 0.2 to 8.7 mg/L, and had a median concentration of 0.6 mg/L (table 5). The presence of organic carbon in water can affect the dissolved-oxygen concentration, which in turn can affect the nutrients present in the ground water.

Trace Elements and Radon

Thirteen of the 18 trace elements for which samples were analyzed were detected in ground water in this study (table 5); 4 trace elements (copper, iron, manganese, and uranium) exceeded USEPA drinking-water standards at some sites. The USEPA action level of 1,300 µg/L for copper (U.S. Environmental Protection Agency, 1996) was exceeded at one site (site 22; Appendix 1). About 9 percent of the sites (4 of 45) exceeded the USEPA SMCL of 300 µg/L for iron (U.S. Environmental Protection Agency, 1996). If high iron concentrations are present in drinking water, red oxyhydroxide precipitates can form and may stain laundry and plumbing fixtures; therefore, excessive iron is an undesirable impurity in domestic and industrial water supplies (Hem, 1992). The USEPA SMCL for manganese of 50 µg/L (U.S. Environmental Protection Agency, 1996) was exceeded at about 11 percent of the sites (5 of 45). High manganese concentrations in drinking water can cause a brown discoloration of the water and can affect the taste of the water. In addition, high concentrations of manganese in drinking water are undesirable because of the tendency to deposit black-oxide stains on laundry and fixtures (Hem, 1992). The other trace element that exceeded USEPA drinking-water standards was uranium, for which the PMCL of 20 µg/L (U.S. Environmental Protection Agency, 1996) was exceeded at one site (site 19; Appendix 1).

Iron and manganese concentrations for forest, rangeland, and urban land-use/land-cover classifications showed no significant differences in the concentrations (figs. 6a and 6b). The Kruskal-Wallis test showed that p-values were much greater than 0.05 for iron (p-value=0.75) and manganese concentrations (p-value=0.82).

Radon gas is a natural decay product of uranium. Some of the major sources of radon are from soils enriched in uranium, water that has moved through soils or geologic units containing radon, rocks containing uranium minerals (such as granitic rocks), and uranium or phosphate mine tailings. Radon can enter a building from seepage of the air through dirt floors, cracks in concrete floors or walls, and floor drains or through the use of water (such as in showering) supplied from wells.

Radon was detected in water samples from all 45 sites, and concentrations are shown on a geologic map of the Southern Rocky Mountains physiographic province (fig. 7). The map shows that radon concentrations tend to be higher in areas where Precambrian rocks are exposed, in the eastern and southeastern parts of the study unit (fig. 7). The USEPA does not currently (1999) regulate radon in drinking water. The median radon concentration (1,102 pCiL) was greater than the national average concentration for radon in ground water of 350 pCi/L (Paulsen, 1991).

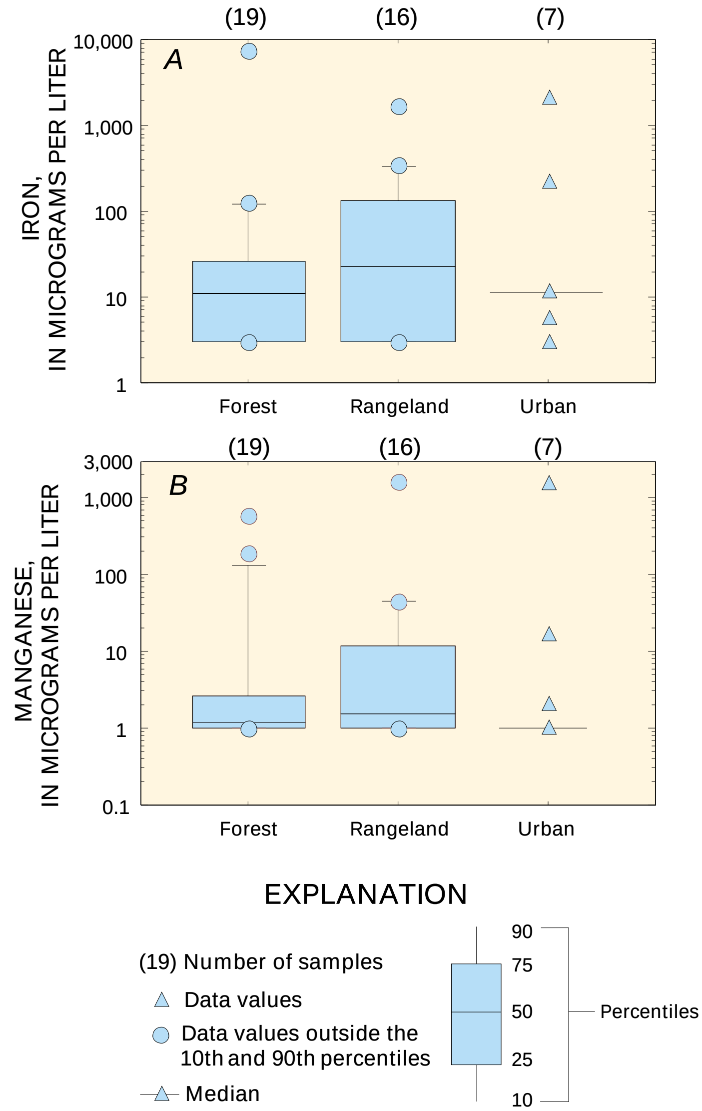

Figure 6. Distribution of (*A*) iron and (*B*) manganese concentrations by land-use/land-cover classifications for the drinking-water wells.

Pesticides

The detections of pesticides for this study were too few to provide any comparison of the data for the 47 pesticides analyzed (table 5). About 6 percent of the sites (2 of 32) sampled had detectable pesticides: deethylatrazine was detected at one site and prometon was detected at another site at estimated concentrations. Deethylatrazine is a degradation product of atrazine, which is used to control preemergent broad-leaved weeds in agricultural and nonagricultural settings. Prometon is a herbicide primarily used as a nonselective soil sterilant in nonagricultural settings.

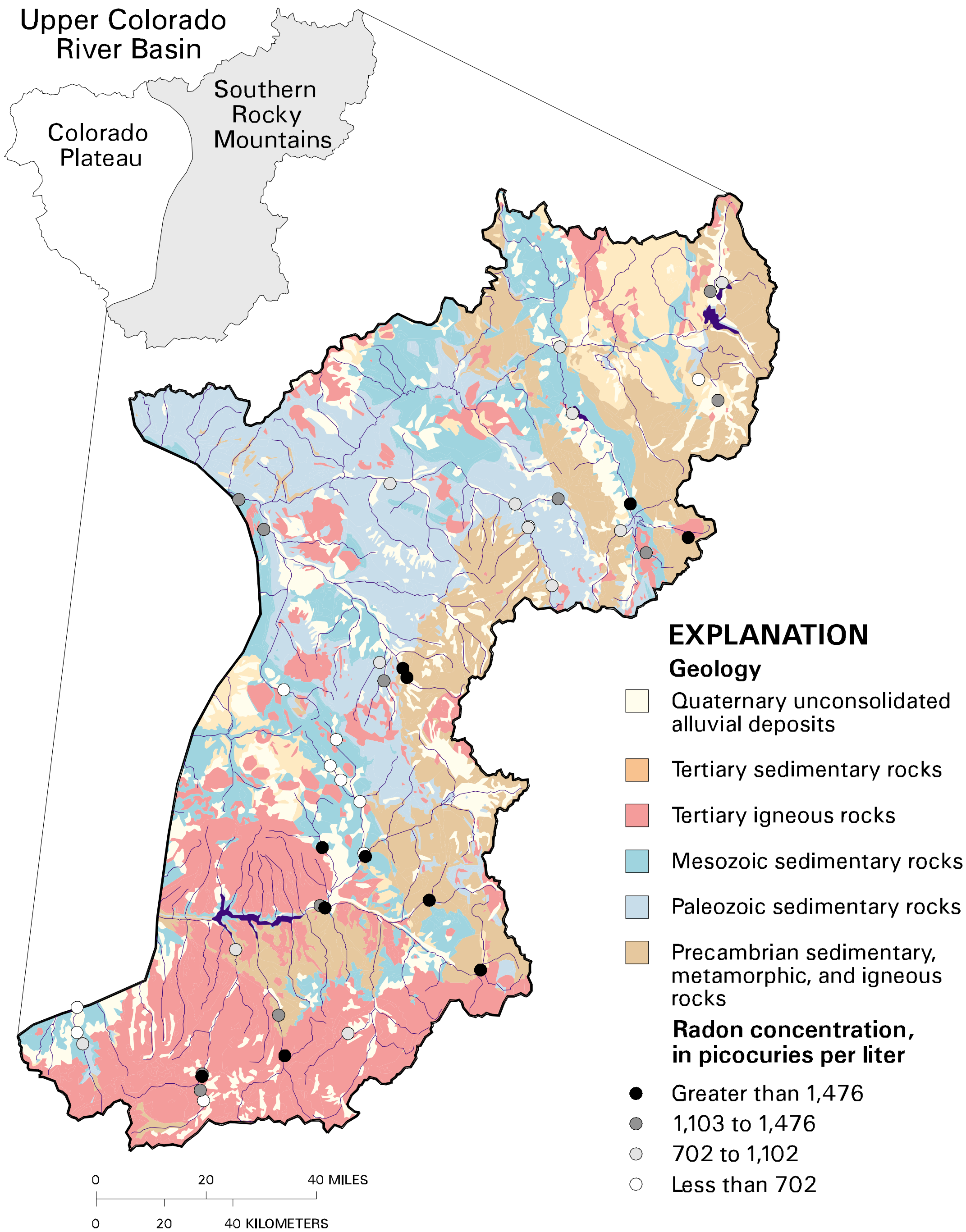

Figure 7. Radon concentrations for sites sampled in the Southern Rocky Mountains physiographic province. (Geology modified from Green, 1992; Tweto, 1979.)

Volatile Organic Compounds

Eight of the 86 VOC's for which samples were analyzed were detected in about 19 percent of the sites (6 of 32) sampled for this study (table 5; Appendix 1). The VOC's detected (not estimated concentrations) at one of the six sites were 1,1,1-trichloroethane, 1,2,4-trimethylbenzene, 1,3-dichlorobenzene, 2-butanone, tetrachloroethylene, tetrahydrofuran, and trichloroethylene. In addition, methyl tert-butyl ether (MTBE) was detected at two sites.

1,1,1-Trichloroethane is used as a solvent for adhesives and in metal degreasing. 1,2,4-Trimethylbenzene is in petroleum by-products. 1,3-Dichlorobenzene is present in fumigants and insecticides. 2-Butanone, which is also known as methyethyl ketone, is used as a solvent for adhesives and is also in paints, varnishes, and lacquers. Tetrachloroethylene is present in solvents for adhesives and also is a by-product of dry cleaning. Tetrahydrofuran can be used as a solvent for adhesives, is used in the process of creating polyvinyl chloride (PVC), and is also present in glues used for joining plumbing fixtures. Trichloroethylene is used as a metal degreaser. Detections for these 7 VOC's were within drinking-water standards.

The concentrations measured for MTBE were below the USEPA DWA standard (table 5). MTBE is an organic compound added to gasoline to increase the octane and reduce the carbon monoxide emissions. MTBE has been detected in shallow urban wells throughout the United States (Squillace and others, 1996). Volatile organic compounds were most commonly detected in rangeland and urban settings (67 percent [6 of 9] of the detected compounds were found associated with rangeland and urban land uses). The results for rangeland in the Southern Rocky Mountains physiographic province reflect in part the residential development, which is predominantly in rural settings.

Bacteria and Methylene Blue Active Substances

Samples from the 45 sites were analyzed for total coliform bacteria. Total coliform bacteria are analyzed because these bacteria may be an indicator of pathogenic bacteria (Myers and Sylvester, 1997). Coliform bacteria are present in wastewater and also are present naturally in the soils. At about 13 percent of the sites sampled (6 of 45), total coliform bacteria were detected. For all sites, total coliform bacteria counts ranged from less than 1 to 60 cols/100 mL. Samples that had detectable bacteria were also analyzed for *E. coli*; however, *E. coli* (an indication of fecal contamination) was not detected in any of the samples. A count of 1 col/100 mL of total coliform bacteria in water exceeds the USEPA MCLG drinking-water standard (U.S. Environmental Protection Agency, 1996).

Samples also were analyzed for MBAS, which can be an indicator of contamination by wastewater. The MBAS analysis tests for the presence of anionic sulfate- and sulfonate-based surfactants (Burkhardt and others, 1995) that are present in soaps and detergents. MBAS concentrations ranged from less than the reporting limit of 0.02 to 0.04 mg/L, of which 7 percent (3 of 45) were above the reporting limit. The low concentrations make it difficult to determine if there is possible contamination from wastewater (such as from individual septic disposal systems). Other constituents (such as nutrients and bacteria) that may be an indication of contamination from wastewater also need to be examined in order to determine if the possibility exists for contamination.

SUMMARY

In 1997, 45 ground-water sites were sampled in the Upper Colorado River Basin of Colorado to assess the ground-water-quality conditions in a major aquifer system for parts of the Southern Rocky Mountains physiographic province. Selected preexisting wells were sampled in alluvial aquifers because the alluvial aquifers generally are productive aquifers and wells are easily developed in these aquifers. Of the 45 sites sampled, two were springs and one was a monitoring well not used for a water supply. Some of the 45 sites sampled also were located in or near mining districts. However, statistical differences were not observed between samples from the mining sites and those from sites not associated with mining activities for most of the constituents analyzed; therefore, all sites were analyzed together.

Specific conductance for the ground-water sites ranged from 57 to 6,650 μS/cm. The highest concentrations of specific conductance were from sites located in the northwestern part of the study unit. Dissolved-oxygen concentrations ranged from 0.1 to 6.0 mg/L and had a median concentration of 2.9 mg/L. The pH values ranged from 6.1 to 8.1; about 4 percent of the sites (2 of 45) were below the SMCL range, which ranges from 6.5 to 8.5. About 5 percent (2 of 43 samples) of the samples exceeded the U.S. Environmental Protection Agency recommended turbidity value of 5 NTU; one of the two samples was from the monitoring well.

Dissolved-solids concentrations were higher where sedimentary rocks are exposed, such as in the northwestern part of the Southern Rocky Mountains physiographic province. Dissolved-solids concentrations were not significantly different

(Kruskal-Wallis test; p-value = 0.41) among land-use/land-cover classifications (forest, rangeland, and urban) in the drinking-water wells (42 sites) sampled in this study. Water compositions for most of the sites were calcium, magnesium, and bicarbonate waters; however, sulfate-dominant waters were identified in sites located in areas of exposed sedimentary rocks and in or near mining districts in the basin. Sulfate concentrations exceeded the U.S. Environmental Protection Agency SMCL drinking-water standard at about 9 percent of the sites (4 of 45).

Nutrient concentrations for sites sampled as part of this study were within drinking-water standards. Only one site had a nitrate concentration greater than 3.0 mg/L, indicating a possible influence from human activities. Nitrate concentrations were not significantly different (Kruskal-Wallis test; p-value = 0.30) among land-use/land-cover classifications in the drinking-water wells (42 sites).

The trace elements that most often did not meet drinking-water standards were iron and manganese. The SMCL for iron was exceeded at about 9 percent (4 of 45) of the sites, and the SMCL for manganese was exceeded at 11 percent (5 of 45) of the sites. Iron and manganese concentrations in the drinking-water wells (42 sites) were not significantly different among the land-use/land-cover classifications (forest, rangeland, and urban). Radon concentrations were higher in the eastern and southeastern parts of the study unit where Precambrian rocks are exposed. All samples exceeded the USEPA PMCL of 300 pCi/L for radon, a standard which has been withdrawn by the USEPA and is currently under review. Radon is a natural decay product of uranium, and the presence of radon in water is related to the soils and hydrologic units through which the water travels.

Pesticides were detected at concentrations below the reporting limits, and concentrations were too few to allow for comparisons of the data. However, 8 VOC's were detected at about 19 percent of the sites (6 of 32). Concentrations for all VOC's detected were less than the USEPA drinking-water standards. The majority of the VOC's detected were in rangeland classification, which reflects the residential development in rural settings of the Southern Rocky Mountains physiographic province.

At about 13 percent of the sites sampled (6 of 45), total coliform bacteria were detected, but no *E. coli* was detected. The USEPA has a MCLG of zero bacteria (0 cols/100 mL) for drinking water. Methylene blue active substances (MBAS) were analyzed and detected at about 7 percent of the sites (3 of 45). The MBAS concentrations were just above the reporting limit of 0.2 mg/L. These low concentrations make it difficult to determine if the data show contamination from human factors.

Overall, the water from the sites sampled in the alluvial aquifers throughout the Southern Rocky Mountains physiographic province is suitable for most uses. Exceedances of the USEPA SMCL's for dissolved solids, sulfate, iron, and manganese are probably a function of the surrounding geology and may be influenced by the low dissolved oxygen at some sites. Radon, which occurs naturally, was detected in all the samples at concentrations greater than 300 pCi/L. The presence of nitrate at one site at a concentration above 3.0 mg/L and the detections of VOC's and MBAS at other sites may indicate some effects of human activities on the water quality.

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APPENDIX

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Station identification number (latitude-longitude)	Date	Water temperature, ^{o}C (00010)	Specific conductance, µS/cm (00095)	Dissolved oxygen, mg/L (00300)	pH, field (00400)	pH, lab (00403)	Turbidity, NTU (00076)	Alkalinity, mg/L as $CaCO_3$ (90410)	Hardness, Total, mg/L as $CaCO_3$ (00900)
1	380032107180600	08-05-97	10.4	324	---	7.4	7.3	0.6	117	150
2	381045107450800	09-16-97	12.8	601	3.7	7.4	7.5	4.1	176	290
3	381339107042500	09-18-97	9.4	238	0.1	6.7	6.9	0.4	107	94
4	381804107061000	09-17-97	10.6	246	1.7	7.3	7.3	0.3	116	110
5	381824107113200	09-15-97	11.2	172	3.4	7.1	7.3	0.8	61	76
6	382414106244900	08-04-97	7.5	227	2.8	6.9	7.2	5.6	93	100
7	383109106573400	08-05-97	9.9	584	0.2	7.2	7.5	0.5	215	300
8	383121106583000	08-28-97	13.8	281	1.7	7.0	7.3	1.3	131	140
9	383236106513100	08-25-97	10.1	131	5.4	7.1	7.2	1.5	61	56
10	383326106373900	08-06-97	9.2	157	3.9	7.2	7.3	0.3	77	76
11	383953106503000	08-07-97	8.7	241	3.5	7.6	7.8	0.1	115	110
12	384126106590200	08-26-97	10.0	568	0.6	7.3	7.3	1.3	313	300
13	384815106523000	08-26-97	12.9	327	3.4	7.6	7.7	0.2	150	170
14	390419107110100	09-08-97	8.2	338	3.2	7.2	7.4	1.4	182	200
15	390810106463000	09-10-97	7.5	66	4.7	6.7	7.0	0.1	28	28
16	391016106521000	09-09-97	10.2	367	4.7	7.6	7.8	0.1	159	180
17	392850107184900	09-04-97	14.6	630	2.6	7.3	7.4	0.3	266	280
18	393152106001700	09-03-97	10.3	593	1.7	7.4	7.5	1.9	256	290
19	393302107242600	09-10-97	11.2	6,650	1.7	6.9	7.0	6.1	648	3,400
20	393409106244300	08-19-97	6.0	122	2.9	6.8	7.0	0.1	56	58
21	393716106281800	08-21-97	10.2	849	3.4	7.6	7.6	0.2	125	380
22	393815106541900	08-21-97	13.4	2,810	3.7	7.0	7.2	50	159	1,700
23	393844106193300	08-20-97	7.2	267	2.9	7.9	7.9	0.1	122	130

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

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Site (fig. 2)	Station identification number (latitude-longitude)	Date	Water temperature, ^{o}C (00010)	Specific conductance, µS/cm (00095)	Dissolved oxygen, mg/L (00300)	pH, field (00400)	pH, lab (00403)	Turbidity, NTU (00076)	Alkalinity, mg/L as $CaCO_3$ (90410)	Hardness, Total, mg/L as $CaCO_3$ (00900)
24	393916106043000	09-08-97	7.3	276	1.8	7.0	7.1	0.1	71	100
25	395220106175400	08-18-97	9.8	384	4.4	7.5	7.7	---	196	190
26	395658105485400	09-02-97	10.8	167	0.8	6.6	6.8	0.6	81	73
27	395935105535800	09-13-97	7.1	374	5.9	7.6	7.6	0.2	178	180
28	400229106223500	09-04-97	10.8	761	2.4	7.4	7.6	---	191	330
29	401336105524500	09-13-97	6.9	117	5.9	6.8	6.9	3.0	58	45
30	401510105503000	09-05-97	7.5	172	2.5	8.1	8.0	0.6	83	66
M1	375920107173000	08-27-97	9.8	695	2.1	7.5	7.6	0.1	133	350
M2	380244107181700	08-27-97	9.3	220	2.4	7.1	7.2	0.9	67	94
M3	380307107181400	08-27-97	11.0	440	4.4	7.8	7.9	2.7	120	160
M4	380532107425600	09-16-97	9.7	485	5.7	7.5	7.5	0.9	83	230
M5	380711107444400	09-16-97	14.4	511	0.4	6.9	7.2	0.1	178	250
M6	384050106511500	08-07-97	12.1	290	1.0	6.8	7.3	2.1	135	140
M7	385125106571900	08-06-97	10.2	176	1.1	7.0	7.2	1.5	83	76
M8	385345107002000	08-06-97	7.9	100	2.0	6.6	6.9	0.3	38	44
M9	385726106591600	09-17-97	11.4	273	4.5	7.3	7.6	0.2	137	140
M10	390421106533400	09-09-97	9.4	57	2.3	6.1	6.6	0.1	27	20
M11	390737106505500	09-09-97	13.3	704	3.9	7.4	7.7	0.7	113	370
M12	392510106185100	08-19-97	5.5	112	3.0	6.8	6.9	2.6	52	51
M13	393334106250300	08-20-97	6.8	147	1.7	6.8	6.9	0.1	62	69
M14	393459106054200	08-22-97	10.9	558	4.8	7.3	7.3	0.5	102	230
M15	393813105530000	09-11-97	5.0	163	6.0	6.3	6.5	0.9	9	58

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Site (fig. 2)	Dissolved solids, mg/L (70300)	Bicarbonate, mg/L as HCO_3 (00453)	Bromide, dissolved, mg/L (71870)	Calcium, dissolved, mg/L (00915)	Chloride, dissolved, mg/L (00940)	Fluoride, dissolved, mg/L (00950)	Magnesium, dissolved, mg/L (00925)	Potassium, dissolved, mg/L (00935)	Silica, dissolved, mg/L (00955)	Sodium, dissolved, mg/L (00930)	Sulfate, dissolved, mg/L (00945)
1	223	140	0.02	47.1	0.90	0.31	7.80	2.79	26.1	5.83	48.1
2	397	212	0.03	85.9	1.37	0.34	18.5	1.77	11.6	11.6	140.1
3	168	134	0.11	28.3	1.05	0.31	5.56	7.38	35.0	7.01	8.69
4	170	134	0.02	30.9	2.14	0.23	8.52	2.74	37.7	7.46	7.58
5	120	71	0.02	24.6	1.00	0.37	3.60	1.39	20.5	4.57	23.3
6	163	79	0.01	28.9	0.60	0.25	7.15	1.14	30.9	4.82	20.1
7	395	261	0.03	89.4	7.40	0.15	19.0	1.83	13.8	5.94	93.1
8	154	156	0.02	44.0	2.64	0.16	7.76	1.57	12.9	3.71	13.1
9	119	78	0.02	17.6	1.52	0.16	2.91	1.68	36.5	4.80	3.70
10	95	95	<0.01	20.8	0.45	0.19	5.89	0.99	8.21	1.81	4.48
11	146	135	0.02	31.2	1.60	0.14	8.39	1.05	9.14	4.54	6.03
12	361	362	<0.01	95.3	0.75	0.26	15.5	1.35	30.9	9.51	7.17
13	200	177	0.02	57.7	0.58	<0.1	6.52	1.03	7.89	2.13	23.0
14	232	218	0.01	62.5	1.14	0.10	11.7	1.18	7.84	3.69	24.9
15	42	129	<0.01	8.90	0.19	0.64	1.31	0.4	7.13	2.01	4.20
16	227	187	<0.01	58.1	5.14	0.12	8.97	1.95	9.36	1.68	29.1
17	389	315	0.13	82.1	13.7	0.34	17.2	2.32	23.5	26.5	47.7
18	370	10	0.02	65.5	0.49	0.14	30.2	1.31	20.9	13.6	65.8
19	6,726	11	0.83	516	281	0.48	523	31.5	15.5	502	3,728
20	84	6	<0.01	14.0	0.41	0.15	5.66	0.85	10.4	2.23	7.09
21	607	10	0.02	120	12.5	0.14	19.4	1.17	7.14	34.6	291
22	2,716	13	0.13	419	40.0	0.40	149	2.58	14.3	99.3	1,601
23	164	7	0.02	44.1	9.01	<0.1	4.31	1.06	6.07	4.45	5.89
24	169	7	0.03	32.4	16.0	0.18	5.22	1.52	9.21	8.61	33.1
25	227	10	0.02	61.7	0.55	0.19	7.72	1.59	15.3	6.93	8.80
26	122	11	<0.01	22.8	0.70	0.16	3.82	1.84	33.2	5.13	0.79
27	247	7	0.05	68.4	11.4	0.18	3.15	3.96	34.9	5.08	5.02
28	513	11	0.07	69.0	21.4	0.30	37.1	2.66	24.2	30.4	175
29	110	7	<0.01	13.6	0.48	0.57	2.68	2.71	47.5	5.78	2.41
30	125	8	<0.01	22.6	0.51	0.74	2.26	6.65	33.3	5.99	0.96

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

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M1	514	156	0.02	115	1.12	0.36	14.8	2.13	21.1	7.24	232
M2	145	71	<0.01	31.3	1.92	0.34	3.74	1.01	14.0	7.78	37.3
M3	286	143	0.04	52.6	2.51	1.32	6.06	0.24	10.2	31.8	94.7
M4	331	95	0.10	84.9	2.47	0.39	4.67	1.05	9.08	8.12	168
M5	330	207	0.03	86.5	3.01	0.33	8.83	6.32	14.5	7.62	89.0
M6	174	159	<0.01	45.5	0.71	0.15	6.73	1.27	9.24	3.14	17.7
M7	109	101	<0.01	23.1	1.10	<0.1	4.46	0.81	10.5	6.54	6.82
M8	68	45	<0.01	15.0	0.17	<0.1	1.58	0.57	7.99	2.11	10.2
M9	161	162	0.02	50.4	0.18	<0.1	2.79	0.41	7.31	2.73	10.0
M10	52	32	<0.01	5.79	0.20	0.78	1.34	0.43	12.9	3.36	1.26
M11	524	129	0.01	113	0.30	<0.1	21.6	1.06	13.5	5.23	261
M12	77	63	<0.01	12.8	1.91	<0.1	4.49	0.84	10.2	2.59	3.99
M13	96	7	<0.01	16.6	1.41	0.12	6.57	0.93	10.3	3.07	10.7
M14	362	11	0.07	68.3	25.5	<0.1	14.1	4.18	12.6	17.5	111
M15	117	5	<0.01	16.6	0.74	0.35	3.97	1.68	21.5	3.96	54.6

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province —Continued

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Site (fig. 2)	Ammonia, dissolved, mg/L as N (00608)	Ammonia plus organic, dissolved, mg/L as N (00623)	Nitrite, dissolved, mg/L as N (00613)	Nitrate plus nitrite, dissolved, mg/L as N (00631)	Orthophosphate, dissolved, mg/L as P (00671)	Phosphorus, dissolved, mg/L as P (00666)	Arsenic, dissolved, µg/L (01000)	Aluminum, dissolved, µg/L (01106)	Antimony, dissolved, µg/L (01095)	Barium, dissolved, µg/L (01005)	Beryllium, dissolved, µg/L (01010)
1	<0.02	<0.2	<0.01	0.08	0.06	0.03	1.0	7.4	<1.0	36	<1.0
2	<0.02	<0.2	<0.01	0.13	<0.01	0.01	<1.0	7.5	<1.0	16	<1.0
3	0.02	<0.2	<0.01	<0.05	0.09	0.08	1.1	5.2	<1.0	124	<1.0
4	0.04	<0.2	<0.01	0.47	0.23	0.23	3.5	8.7	<1.0	32	<1.0
5	<0.02	<0.2	<0.01	0.11	0.03	0.02	1.0	8.6	<1.0	61	<1.0
6	<0.02	<0.2	<0.01	0.14	0.05	0.02	<1.0	9.3	<1.0	38	<1.0
7	0.02	<0.2	<0.01	<0.05	0.01	<0.01	<1.0	6.2	<1.0	117	<1.0
8	<0.02	<0.2	<0.01	0.09	0.01	0.02	<1.0	7.1	<1.0	63	<1.0
9	<0.02	<0.2	<0.01	0.25	0.20	0.19	<1.0	3.2	<1.0	28	<1.0
10	<0.02	<0.2	<0.01	<0.05	0.04	0.01	<1.0	5.3	<1.0	17	<1.0
11	<0.02	<0.2	<0.01	1.12	0.02	<0.01	<1.0	4.4	<1.0	73	<1.0
12	<0.02	<0.2	<0.01	0.34	0.02	<0.01	<1.0	3.0	<1.0	204	<1.0
13	<0.02	<0.2	<0.01	0.28	<0.01	<0.01	<1.0	10	<1.0	87	<1.0
14	<0.02	<0.2	<0.01	0.44	<0.01	<0.01	<1.0	7.8	<1.0	50	<1.0
15	<0.02	<0.2	<0.01	0.08	<0.01	<0.01	<1.0	5.5	<1.0	16	<1.0
16	<0.02	<0.2	<0.01	0.62	<0.01	<0.01	<1.0	3.2	<1.0	104	<1.0
17	<0.02	<0.2	<0.01	2.32	0.01	<0.01	<1.0	4.9	<1.0	239	<1.0
18	0.05	<0.2	<0.01	0.06	<0.01	<0.01	<1.0	6.8	<1.0	33	<1.0
19	0.10	0.3	<0.01	1.38	<0.01	<0.01	<1.0	4.7	<3.0	8.0	<3.0
20	<0.02	<0.2	<0.01	0.17	<0.01	<0.01	<1.0	3.1	<1.0	12	<1.0
21	<0.02	<0.2	<0.01	0.32	<0.01	<0.01	<1.0	2.8	<1.0	43	<1.0
22	0.04	<0.2	<0.01	0.51	<0.01	<0.01	<1.0	3.9	<2.0	6.7	<2.0
23	<0.02	<0.2	<0.01	0.29	<0.01	0.01	<1.0	4.1	<1.0	222	<1.0
24	<0.02	<0.2	<0.01	0.46	<0.01	<0.01	<1.0	3.8	<1.0	79	<1.0
25	<0.02	<0.2	<0.01	0.48	0.01	<0.01	<1.0	7.5	<1.0	267	<1.0
26	<0.02	<0.2	<0.01	0.26	0.11	0.12	1.1	8.2	<1.0	44	<1.0
27	<0.00	<0.2	<0.01	0.42	0.10	0.08	1.3	6.9	<1.0	20	<1.0
28	0.53	0.6	<0.01	0.05	0.19	<0.01	2.1	7.2	<1.0	73	<1.0
29	<0.02	<0.2	<0.01	0.16	0.08	0.06	1.0	5.9	<1.0	9.7	<1.0
30	0.03	<0.2	<0.01	0.06	0.07	0.06	2.7	5.7	<1.0	11	<1.0

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

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Site (fig. 2)	Ammonia, dissolved, mg/L as N (00608)	Ammonia plus organic, dissolved, mg/L as N (00623)	Nitrite, dissolved, mg/L as N (00613)	Nitrate plus nitrite, dissolved, mg/L as N (00631)	Orthophosphate, dissolved, mg/L as P (00671)	Phosphorus, dissolved, mg/L as P (00666)	Arsenic, dissolved, µg/L (01000)	Aluminum, dissolved, µg/L (01106)	Antimony, dissolved, µg/L (01095)	Barium, dissolved, µg/L (01005)	Beryllium, dissolved, µg/L (01010)
M1	<0.02	<0.2	<0.01	0.29	0.04	0.06	<1.0	4.1	<1.0	29	<1.0
M2	<0.02	<0.2	<0.01	0.26	<0.01	<0.01	<1.0	7.4	<1.0	58	<1.0
M3	<0.02	<0.2	<0.01	0.78	0.01	<0.01	<1.0	7.4	<1.0	<1.0	<1.0
M4	<0.02	<0.2	<0.01	0.16	<0.01	<0.01	<1.0	7.7	<1.0	22	<1.0
M5	0.02	<0.2	<0.01	0.56	0.09	0.06	<1.0	6.4	<1.0	60	<1.0
M6	<0.02	<0.2	<0.01	<0.05	0.01	<0.01	<1.0	5.2	<1.0	94	<1.0
M7	<0.02	<0.2	<0.01	0.13	0.01	<0.01	<1.0	7.0	<1.0	37	<1.0
M8	0.03	<0.2	<0.01	0.11	0.02	<0.01	<1.0	7.6	<1.0	12	<1.0
M9	<0.02	<0.2	<0.01	0.11	<0.01	<0.01	<1.0	7.5	<1.0	55	<1.0
M10	<0.02	<0.2	<0.01	0.06	<0.01	<0.01	<1.0	19	<1.0	4.1	<1.0
M11	<0.02	<0.2	<0.01	0.17	<0.01	<0.01	1.2	3.4	<1.0	16	<1.0
M12	<0.02	<0.2	<0.01	0.11	<0.01	<0.01	<1.0	4.1	<1.0	34	<1.0
M13	<0.02	<0.2	<0.01	0.39	<0.01	<0.01	<1.0	3.1	<1.0	22	<1.0
M14	<0.02	<0.2	<0.01	6.30	<0.01	<0.01	<1.0	2.7	<1.0	115	<1.0
M15	<0.02	<0.2	<0.01	0.93	0.08	0.07	<1.0	6.6	<1.0	2.1	<1.0

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Cadmium, dissolved, µg/L (01025)	Chromium, dissolved, µg/L (01030)	Cobalt, dissolved, µg/L (01035)	Copper, dissolved, µg/L (01040)	Iron, dissolved, µg/L (01046)	Lead, dissolved, µg/L (01049)	Manganese, dissolved, µg/L (01056)	Molybdenum, dissolved, µg/L (01060)	Nickel, dissolved, µg/L (01065)	Selenium, dissolved, µg/L (01145)	Silver, dissolved, µg/L (01075)	Uranium, dissolved, µg/L (22703)
1	<1.0	1.8	<1.0	6.2	30	1.4	1.50	<1.0	<1.0	<1.0	<1.0	<1.0
2	<1.0	2.0	<1.0	3.8	30	<1.0	1.39	2.2	1.4	<1.0	<1.0	1.5
3	<1.0	3.2	<1.0	1.3	7,439	<1.0	602	2.4	2.5	<1.0	<1.0	<1.0
4	<1.0	<1.0	<1.0	29	<3.0	<1.0	<1.0	2.1	1.3	<1.0	<1.0	1.0
5	<1.0	<1.0	<1.0	2.0	9.7	<1.0	1.33	1.3	<1.0	<1.0	<1.0	<1.0
6	<1.0	1.5	<1.0	7.8	236	<1.0	12.1	<1.0	<1.0	<1.0	<1.0	<1.0
7	<1.0	<1.0	<1.0	<1.0	2,199	<1.0	1,570	2.8	<1.0	<1.0	---	13
8	<1.0	1.5	<1.0	1.3	5.4	<1.0	1.64	<1.0	<1.0	<1.0	<1.0	1.2
9	<1.0	<1.0	<1.0	1.9	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	<1.0	1.5	<1.0	21	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11	<1.0	1.3	<1.0	127	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.8
12	<1.0	2.4	<1.0	32	16	<1.0	2.56	<1.0	1.2	<1.0	<1.0	2.1
13	<1.0	1.2	<1.0	7.6	5.4	<1.0	1.29	<1.0	<1.0	<1.0	<1.0	<1.0
14	<1.0	1.7	<1.0	1.9	228	<1.0	17.3	<1.0	<1.0	<1.0	<1.0	<1.0
15	<1.0	<1.0	<1.0	4.2	<3.0	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	1.5
16	<1.0	1.5	<1.0	17	<3.0	1.5	<1.0	1.9	<1.0	<1.0	<1.0	<1.0
17	<1.0	1.7	<1.0	30	<3.0	1.0	<1.0	1.5	<1.0	1.8	<1.0	6.3
18	<1.0	<1.0	<1.0	16	129	<1.0	44.8	1.0	<1.0	<1.0	<1.0	7.3
19	<3.0	12	<3.0	6.4	<18	<3.0	876	16	41	3.0	<3.0	34
20	<1.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0
21	<1.0	1.2	<1.0	12	5.5	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	1.9
22	<2.0	<2.0	<2.0	2,042	345	<2.0	44.5	2.6	3.8	9.6	<2.0	14
23	<1.0	1.5	<1.0	<1.0	12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9
24	<1.0	<1.0	<1.0	3.9	<3.0	<1.0	<1.0	16	<1.0	<1.0	<1.0	<1.0
25	<1.0	2.1	<1.0	23	<3.0	<1.0	<1.0	2.3	1.4	1.2	<1.0	1.5
26	<1.0	<1.0	<1.0	8.9	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
27	<1.0	1.7	<1.0	48	<3.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	2.5
28	<1.0	1.3	<1.0	<1.0	1,696	<1.0	1,622	1.5	1.1	<1.0	<1.0	1.5
29	<1.0	1.1	<1.0	42	11	<1.0	2.29	<1.0	<1.0	<1.0	<1.0	<1.0
30	<1.0	<1.0	<1.0	<1.0	21	<1.0	195	2.8	<1.0	<1.0	<1.0	2.8

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Cadmium, dissolved, µg/L (01025)	Chromium, dissolved, µg/L (01030)	Cobalt, dissolved, µg/L (01035)	Copper, dissolved, µg/L (01040)	Iron, dissolved, µg/L (01046)	Lead, dissolved, µg/L (01049)	Manganese, dissolved, µg/L (01056)	Molybdenum, dissolved, µg/L (01060)	Nickel, dissolved, µg/L (01065)	Selenium, dissolved, µg/L (01145)	Silver, dissolved, µg/L (01075)	Uranium, dissolved, µg/L (22703)
M1	<1.0	2.2	<1.0	25	5.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
M2	<1.0	<1.0	<1.0	2.8	12	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0
M3	<1.0	<1.0	<1.0	4.4	28	<1.0	2.08	3.7	<1.0	11	<1.0	6.6
M4	<1.0	1.1	<1.0	2.1	<3.0	<1.0	<1.0	1.3	1.2	<1.0	<1.0	<1.0
M5	<1.0	2.2	<1.0	5.9	44	<1.0	<1.0	1.6	1.0	<1.0	<1.0	<1.0
M6	<1.0	2.6	<1.0	1.4	179	<1.0	46.4	<1.0	1.6	<1.0	<1.0	<1.0
M7	<1.0	2.0	<1.0	79	92	<1.0	11.3	<1.0	<1.0	<1.0	<1.0	<1.0
M8	<1.0	<1.0	<1.0	<1.0	17	<1.0	1.21	<1.0	<1.0	<1.0	<1.0	<1.0
M9	<1.0	2.0	<1.0	184	<3.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0
M10	<1.0	<1.0	<1.0	76	34	<1.0	1.88	2.2	<1.0	<1.0	<1.0	2.4
M11	<1.0	<1.0	<1.0	68	4.8	<1.0	<1.0	2.0	<1.0	3.6	<1.0	3.4
M12	<1.0	<1.0	<1.0	6.2	112	<1.0	7.69	<1.0	<1.0	<1.0	<1.0	<1.0
M13	<1.0	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
M14	<1.0	2.2	<1.0	33	12	3.4	1.97	<1.0	1.2	<1.0	<1.0	2.26
M15	<1.0	<1.0	<1.0	66	23	<1.0	2.73	<1.0	<1.0	<1.0	<1.0	<1.0

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Zinc, dissolved, µg/L (01090)	Radon-222, total, pCi/L (82303)	Dissolved organic carbon, mg/L (00681)	2, 6-Diethylanile, µg/L (82660)	Acetochlor, µg/L (49260)	Alachlor, µg/L (46342)	Atrazine, µg/L (39632)	Azinphos, methyl-, µg/L (82686)
1	299	1,449	1.4	<0.003	<0.002	<0.002	<0.001	<0.001
2	26	610	0.7	<0.003	<0.002	<0.002	<0.001	<0.001
3	83	1,193	4.4	<0.003	<0.002	<0.002	<0.001	<0.001
4	303	1,928	2.8	<0.003	<0.002	<0.002	<0.001	<0.001
5	3.9	959	0.6	<0.003	<0.002	<0.002	<0.001	<0.001
6	11	3,830	0.5	<0.003	<0.002	<0.002	<0.001	<0.001
7	7.5	1,515	1.4	<0.003	<0.002	<0.002	<0.001	<0.001
8	15	1,287	1.1	<0.003	<0.002	<0.002	<0.001	<0.001
9	99	998	1.9	<0.003	<0.002	<0.002	<0.001	<0.001
10	17	2,492	0.8	<0.003	<0.002	<0.002	<0.001	<0.001
11	6.2	2,527	0.7	<0.003	<0.002	<0.002	<0.001	<0.001
12	60	2,048	3.6	<0.003	<0.002	<0.002	<0.001	<0.001
13	70	673	0.3	<0.003	<0.002	<0.002	<0.001	<0.001
14	119	551	0.5	<0.003	<0.002	<0.002	<0.001	<0.001
15	1.1	4,030	0.4	<0.003	<0.002	<0.002	<0.001	<0.001
16	236	852	0.3	<0.003	<0.002	<0.002	<0.001	<0.001
17	5.3	1,382	1.3	<0.003	<0.002	<0.002	<0.001	<0.001
18	5.1	1,300	0.2	<0.003	<0.002	<0.002	<0.001	<0.001
19	6.4	1,182	8.7	<0.003	<0.002	<0.002	<0.001	<0.001
20	<1.0	1,025	0.4	<0.003	<0.002	<0.002	<0.001	<0.001
21	33	1,102	0.5	<0.003	<0.002	<0.002	<0.001	<0.001
22	962	835	1.7	<0.003	<0.002	<0.002	<0.001	<0.001
23	1.9	1,239	0.3	<0.003	<0.002	<0.002	<0.001	<0.001
24	3.3	2,054	0.6	<0.003	<0.002	<0.002	<0.001	<0.001
25	20	765	0.6	<0.003	<0.002	<0.002	<0.001	<0.001
26	43	1,462	0.6	<0.003	<0.002	<0.002	<0.001	<0.001
27	257	305	1.9	<0.003	<0.002	<0.002	<0.001	<0.001
28	23	709	2.4	<0.003	<0.002	<0.002	<0.001	<0.001
29	74	1,441	0.5	<0.003	<0.002	<0.002	<0.001	<0.001
30	13	751	0.5	<0.003	<0.002	<0.002	<0.001	<0.001

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Zinc, dissolved, µg/L (01090)	Radon-222, total, pCi/L (82303)	Dissolved organic carbon, mg/L (00681)	2, 6-Diethylaniline, µg/L (82660)	Acetochlor, µg/L (49260)	Alachlor, µg/L (46342)	Atrazine, µg/L (39632)	Azinphos, methyl-, µg/L (82686)
M1	8.7	545	0.4	---	---	---	---	---
M2	9.6	1,646	0.2	---	---	---	---	---
M3	2.4	1,206	0.2	---	---	---	---	---
M4	58	858	0.2	---	---	---	---	---
M5	24	577	0.8	<0.003	<0.002	<0.002	<0.001	<0.001
M6	10	667	1.2	---	---	---	---	---
M7	2.3	512	0.4	---	---	---	---	---
M8	45	426	0.6	---	---	---	---	---
M9	180	339	0.4	---	---	---	---	---
M10	28	3,467	0.8	---	---	---	---	---
M11	55	1,184	0.2	---	---	---	---	---
M12	894	963	1.1	---	---	---	---	---
M13	19	685	0.4	---	---	---	---	---
M14	39	890	0.6	---	---	---	---	---
M15	1,272	2,041	0.2	<0.003	<0.002	<0.002	<0.001	<0.001

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Benfluralin, µg/L (82673)	Butylate, µg/L (04028)	Carbaryl, µg/L (82680)	Carbofuran, µg/L (82674)	Chlorpyrifos, µg/L (38933)	Cyanazine, µg/L (04041)	DCPA (Dacthal), µg/L (82682)	Deethylatrazine, µg/L (04040)	DDE, p,p', µg/L (34653)
1	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
2	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
3	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
4	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
5	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
6	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
7	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
8	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
9	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
10	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
11	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
12	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
13	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
14	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
15	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
16	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
17	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
18	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
19	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
20	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
21	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
22	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	E0.004	<0.006
23	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
24	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
25	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
26	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
27	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
28	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
29	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
30	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Benfluralin, µg/L (82673)	Butylate, µg/L (04028)	Carbaryl, µg/L (82680)	Carbofuran, µg/L (82674)	Chlorpyrifos, µg/L (38933)	Cyanazine, µg/L (04041)	DCPA (Dacthal), µg/L (82682)	Deethylatrazine, µg/L (04040)	DDE, p,p', µg/L (34653)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.002	<0.006

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Diazinon, µg/L (39572)	Dieldrin, µg/L (39381)	Disulfoton, µg/L (82677)	EPTC (Eptam), µg/L (82668)	Ethalfluralin, µg/L (82663)	Ethoprophos, µg/L (82672)	Fonofos, µg/L (04095)	HCH, alpha-, µg/L (34253)	Lindane, µg/L (39341)
1	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
2	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
3	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
4	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
5	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
6	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
7	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
8	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
9	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
10	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
11	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
12	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
13	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
14	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
15	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
16	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
17	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
18	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
19	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
20	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
21	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
22	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
23	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
24	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
25	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
26	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
27	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
28	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
29	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
30	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Diazinon, µg/L (39572)	Dieldrin, µg/L (39381)	Disulfoton, µg/L (82677)	EPTC (Eptam), µg/L (82668)	Ethalfluralin, µg/L (82663)	Ethoprophos, µg/L (82672)	Fonofos, µg/L (04095)	HCH, alpha-, µg/L (34253)	Lindane, µg/L (39341)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.002	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Linuron, µg/L (82666)	Malathion, µg/L (39532)	Metolachlor, µg/L (39415)	Metribuzin, µg/L (82630)	Molinate, µg/L (82671)	Napropamide, µg/L (82684)	Parathion, µg/L (39542)	Parathion, methyl-, µg/L (82667)	Pebulate, µg/L (82669)
1	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
2	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
3	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
4	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
5	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
6	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
7	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
8	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
9	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
10	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
11	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
12	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
13	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
14	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
15	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
16	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
17	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
18	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
19	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
20	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
21	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
22	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
23	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
24	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
25	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
26	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
27	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
28	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
29	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
30	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Linuron, µg/L (82666)	Malathion, µg/L (39532)	Metolachlor, µg/L (39415)	Metribuzin, µg/L (82630)	Molinate, µg/L (82671)	Napropamide, µg/L (82684)	Parathion, µg/L (39542)	Parathion, methyl-, µg/L (82667)	Pebulate, µg/L (82669)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Pendimethalin, µg/L (82683)	Permethrin-cis, µg/L (82687)	Phorate, µg/L (82664)	Prometon, µg/L (04037)	Propachlor, µg/L (04024)	Propanil, µg/L (82679)	Propargite, µg/L (82685)	Propyzamide, µg/L (82676)	Simazine, µg/L (04035)
1	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
2	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
3	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
4	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
5	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
6	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
7	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
8	<0.004	<0.005	<0.002	E0.003	<0.007	<0.004	<0.013	<0.003	<0.005
9	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
10	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
11	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
12	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
13	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
14	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
15	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
16	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
17	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
18	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
19	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
20	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
21	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
22	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
23	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
24	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
25	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
26	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
27	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
28	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
29	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
30	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Pendimethalin, µg/L (82683)	Permethrin-cis, µg/L (82687)	Phorate, µg/L (82664)	Prometon, µg/L (04037)	Propachlor, µg/L (04024)	Propanil, µg/L (82679)	Propargite, µg/L (82685)	Propyzamide, µg/L (82676)	Simazine, µg/L (04035)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.004	<0.005	<0.002	<0.018	<0.007	<0.004	<0.013	<0.003	<0.005

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Tebuthiuron, µg/L (82670)	Terbacil, µg/L (82665)	Terbufos, µg/L (82675)	Thiobencarb, µg/L (82681)	Triallate, µg/L (82678)	Trifluralin, µg/L (82661)	1, 1, 1, 2-Tetrachloroethane, µg/L (77562)	1, 1, 1-Trichloroethane, µg/L (34506)
1	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
2	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
3	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
4	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
5	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
6	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
7	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
8	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
9	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
10	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
11	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
12	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
13	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	E0.01
14	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	E0.02
15	<0.010	<0.020	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
16	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
17	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
18	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
19	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
20	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
21	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	E0.01
22	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	0.95
23	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
24	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	E0.02
25	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
26	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
27	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	E0.02
28	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
29	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
30	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Tebuthiuron, µg/L (82670)	Terbacil, µg/L (82665)	Terbufos, µg/L (82675)	Thiobencarb, µg/L (82681)	Triallate, µg/L (82678)	Trifluralin, µg/L (82661)	1, 1, 1, 2-Tetrachloroethane, µg/L (77562)	1, 1, 1-Trichloroethane, µg/L (34506)
M1	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---
M5	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032
M6	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---
M15	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002	<0.044	<0.032

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 1, 2, 2-Tetrachloroethane, µg/L (34516)	1, 1, 2-Trichloroethane, µg/L (34511)	1, 1, 2-Trichlorotrifluoro-ethane, µg/L (77652)	1, 1-Dichloroethane, µg/L (34496)	1, 1-Dichloroethylene, µg/L (34501)	1, 1-Dichloropropene, µg/L (77168)	1, 2, 3, 4-Tetramethyl-benzene, µg/L (49999)	1, 2, 3, 5-Tetramethyl-benzene, µg/L (50000)
1	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
2	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
3	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
4	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
5	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
6	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
7	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
8	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
9	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
10	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
11	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
12	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
13	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
14	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
15	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
16	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
17	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
18	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
19	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
20	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
21	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
22	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
23	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
24	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
25	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
26	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
27	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
28	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
29	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
30	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 1, 2, 2-Tetrachloroethane, µg/L (34516)	1, 1, 2-Trichloroethane, µg/L (34511)	1, 1, 2-Trichlorotrifluoro-ethane, µg/L (77652)	1, 1-Dichloroethane, µg/L (34496)	1, 1-Dichloroethylene, µg/L (34501)	1, 1-Dichloropropene, µg/L (77168)	1, 2, 3, 4-Tetramethyl-benzene, µg/L (49999)	1, 2, 3, 5-Tetramethyl-benzene, µg/L (50000)
M1	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---
M5	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24
M6	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---
M15	<0.132	<0.064	<0.032	<0.066	<0.044	<0.026	<0.23	<0.24

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 2, 3-Trichlorobenzene, µg/L (77613)	1, 2, 3-Trichloropropane, µg/L (77443)	1, 2, 3-Trimethylbenzene, µg/L (77221)	1, 2, 4-Trichlorobenzene, µg/L (34551)	1, 2, 4-Trimethylbenzene, µg/L (77222)	1, 2-Dibromo-3-chloropropane, µg/L (82625)	1, 2-Dibromomethane, µg/L (77651)	1, 2-Dichlorobenzene, µg/L (34536)
1	<0.266	<0.07	<0.124	<0.188	E0.006	<0.214	<0.036	<0.048
2	<0.266	<0.07	<0.124	<0.188	E0.004	<0.214	<0.036	<0.048
3	<0.266	<0.07	<0.124	<0.188	E0.01	<0.214	<0.036	<0.048
4	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
5	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
6	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
7	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
8	<0.266	<0.07	<0.124	<0.188	E0.01	<0.214	<0.036	<0.048
9	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
10	<0.266	<0.07	<0.124	<0.188	E0.006	<0.214	<0.036	<0.048
11	<0.266	<0.07	<0.124	<0.188	E0.01	<0.214	<0.036	<0.048
12	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
13	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
14	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
15	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
16	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
17	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
18	<0.266	<0.07	<0.124	<0.188	E0.008	<0.214	<0.036	<0.048
19	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
20	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
21	<0.266	<0.07	<0.124	<0.188	E0.01	<0.214	<0.036	<0.048
22	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
23	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
24	<0.266	<0.07	<0.124	<0.188	0.198	<0.214	<0.036	<0.048
25	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
26	<0.266	<0.07	<0.124	<0.188	E0.01	<0.214	<0.036	<0.048
27	<0.266	<0.07	<0.124	<0.188	E0.006	<0.214	<0.036	<0.048
28	<0.266	<0.07	<0.124	<0.188	E0.008	<0.214	<0.036	<0.048
29	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048
30	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 2, 3-Trichlorobenzene, µg/L (77613)	1, 2, 3-Trichloropropane, µg/L (77443)	1, 2, 3-Trimethylbenzene, µg/L (77221)	1, 2, 4-Trichlorobenzene, µg/L (34551)	1, 2, 4-Trimethylbenzene, µg/L (77222)	1, 2-Dibromo-3-chloropropane, µg/L (82625)	1, 2-Dibromomethane, µg/L (77651)	1, 2-Dichlorobenzene, µg/L (34536)
M1	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---
M5	<0.266	<0.07	<0.124	<0.188	E0.006	<0.214	<0.036	<0.048
M6	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---
M15	<0.266	<0.07	<0.124	<0.188	<0.056	<0.214	<0.036	<0.048

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 2-Dichloroethane, µg/L (32103)	1, 2-Dichloropropane, µg/L (34541)	1, 3, 5-Trimethylbenzene, µg/L (77226)	1, 3-Dichlorobenzene, µg/L (34566)	1, 3-Dichloropropane, µg/L (77173)	1, 4-Dichlorobenzene, µg/L (34571)	2, 2-Dichloropropane, µg/L (77170)	2-Butanone, µg/L (81595)
1	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
2	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
3	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	1.68
4	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.68
5	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
6	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
7	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
8	<0.134	<0.068	<0.044	0.1	<0.116	<0.05	<0.078	<1.65
9	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
10	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
11	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
12	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
13	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
14	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
15	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
16	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
17	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
18	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
19	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
20	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
21	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
22	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
23	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
24	<0.134	<0.068	<0.044	E0.008	<0.116	<0.05	<0.078	<1.65
25	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
26	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
27	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
28	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
29	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
30	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	1, 2-Dichloroethane, µg/L (32103)	1, 2-Dichloropropane, µg/L (34541)	1, 3, 5-Trimethylbenzene, µg/L (77226)	1, 3-Dichlorobenzene, µg/L (34566)	1, 3-Dichloropropane, µg/L (77173)	1, 4-Dichlorobenzene, µg/L (34571)	2, 2-Dichloropropane, µg/L (77170)	2-Butanone, µg/L (81595)
M1	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---
M5	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65
M6	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---
M15	<0.134	<0.068	<0.044	<0.054	<0.116	<0.05	<0.078	<1.65

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	2-Chlorotoluene, µg/L (77275)	2-Hexanone, µg/L (77103)	3-Chloropropene, µg/L (78109)	4-Chlorotoluene, µg/L (77277)	4-Isopropyl-1-methylbenzene, µg/L (77356)	4-Methyl-2-pentanone, µg/L (78133)	Acetone, µg/L (81552)	Acrolein, µg/L (34210)	Acrylonitrile, µg/L (34215)
1	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
2	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
3	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	E5	<1.432	<1.226
4	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
5	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
6	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
7	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
8	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
9	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
10	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
11	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
12	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
13	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
14	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
15	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
16	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
17	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
18	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
19	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
20	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
21	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
22	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
23	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
24	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
25	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
26	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
27	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
28	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
29	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
30	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	2-Chlorotoluene, µg/L (77275)	2-Hexanone, µg/L (77103)	3-Chloropropene, µg/L (78109)	4-Chlorotoluene, µg/L (77277)	4-Isopropyl-1-methylbenzene, µg/L (77356)	4-Methyl-2-pentanone, µg/L (78133)	Acetone, µg/L (81552)	Acrolein, µg/L (34210)	Acrylonitrile, µg/L (34215)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.042	<0.746	<0.196	<0.056	<0.11	<0.374	<4.904	<1.432	<1.226

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Benzene, µg/L (34030)	Bromobenzene, µg/L (81555)	Bromochloro-methane, µg/L (77297)	Bromodichloro-methane, µg/L (32101)	Bromoform, µg/L (32104)	Bromomethane, µg/L (34413)	Butylbenzene, µg/L (77342)	Carbon disulfide, µg/L (77041)	Chlorobenzene, µg/L (34301)
1	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	E0.01	<0.028
2	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
3	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
4	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
5	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
6	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	E0.01	<0.028
7	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	E0.03	<0.028
8	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
9	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
10	E0.01	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
11	E0.007	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
12	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
13	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	E0.01	<0.028
14	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
15	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
16	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
17	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
18	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
19	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
20	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
21	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
22	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	E0.03	<0.028
23	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
24	E0.01	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
25	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
26	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
27	E0.01	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
28	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
29	E0.01	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
30	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Benzene, µg/L (34030)	Bromobenzene, µg/L (81555)	Bromochloro-methane, µg/L (77297)	Bromodichloro-methane, µg/L (32101)	Bromoform, µg/L (32104)	Bromomethane, µg/L (34413)	Butylbenzene, µg/L (77342)	Carbon disulfide, µg/L (77041)	Chlorobenzene, µg/L (34301)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	E0.01	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.032	<0.036	<0.044	<0.048	<0.104	<0.148	<0.186	<0.08	<0.028

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province —Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Chloroethane, µg/L (34311)	Chloroform, µg/L (32106)	Chloromethane, µg/L (34418)	Dibromochloro-methane, µg/L (32105)	Dibromomethane, µg/L (30217)	Dichlorodifluoro-methane, µg/L (34668)	Dichloromethane, µg/L (34423)	Diethyl ether, µg/L (81576)	Diisopropyl ether, µg/L (81577)
1	<0.12	<0.052	E0.04	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
2	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
3	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
4	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
5	<0.12	E0.01	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
6	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
7	<0.12	<0.052	E0.05	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
8	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
9	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
10	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
11	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
12	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
13	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
14	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
15	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
16	<0.12	<0.052	<0.254	<0.182	<0.05	E0.1	<0.382	<0.17	<0.098
17	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
18	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
19	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
20	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
21	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
22	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
23	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
24	<0.12	E0.01	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
25	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
26	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
27	<0.12	<0.052	E0.01	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
28	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
29	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
30	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Chloroethane, µg/L (34311)	Chloroform, µg/L (32106)	Chloromethane, µg/L (34418)	Dibromochloro-methane, µg/L (32105)	Dibromo-methane, µg/L (30217)	Dichlorodifluoro-methane, µg/L (34668)	Dichloromethane, µg/L (34423)	Diethyl ether, µg/L (81576)	Diisopropyl ether, µg/L (81577)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.12	<0.052	<0.254	<0.182	<0.05	<0.096	<0.382	<0.17	<0.098

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Ethyl-methacrylate, µg/L (73570)	Ethyl-tert-butyl ether, µg/L (50004)	Ethylbenzene, µg/L (34371)	Hexachloro-butadiene, µg/L (39702)	Hexachloro-ethane, µg/L (34396)	Isopropyl-benzene, µg/L (77223)	Methyl-acrylate, µg/L (49991)	Methyl-acrylonitrile, µg/L (81593)	Methyliodide, µg/L (77424)	Methyl-methacrylate, µg/L (81597)
1	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
2	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
3	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
4	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
5	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
6	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
7	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
8	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
9	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
10	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
11	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
12	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
13	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
14	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
15	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
16	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
17	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
18	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
19	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
20	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
21	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
22	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
23	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
24	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
25	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
26	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
27	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
28	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
29	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
30	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Ethyl-methacrylate, µg/L (73570)	Ethyl-tert-butyl ether, µg/L (50004)	Ethylbenzene, µg/L (34371)	Hexachloro-butadiene, µg/L (39702)	Hexachloro-ethane, µg/L (34396)	Isopropyl-benzene, µg/L (77223)	Methyl-acrylate, µg/L (49991)	Methyl-acrylonitrile, µg/L (81593)	Methyliodide, µg/L (77424)	Methyl-methacrylate, µg/L (81597)
M1	---	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---	---
M5	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35
M6	---	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---	---
M15	<0.278	<0.054	<0.03	<0.142	<0.362	<0.032	<0.612	<0.57	<0.076	<0.35

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Methyl tert-butyl ether, µg/L (78032)	Napthalene, µg/L (34696)	Propylbenzene, µg/L (77224)	Styrene, µg/L (77128)	Tetrachloro-ethylene, µg/L (34475)	Tetrachloro-methane, µg/L (32102)	Tetrahydro-furan, µg/L (81607)	Toluene, µg/L (34010)	Trichloro-ethylene, µg/L (39180)
1	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
2	<0.112	<0.25	<0.042	<0.042	E0.005	<0.088	<1.148	<0.038	<0.038
3	<0.112	<0.25	<0.042	<0.042	E0.009	<0.088	11.3	<0.038	<0.038
4	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
5	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	E0.3	E0.004	<0.038
6	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
7	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
8	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038
9	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
10	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
11	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	E0.1	<0.038	<0.038
12	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
13	<0.112	<0.25	<0.042	<0.042	<0.038	E0.02	<1.148	E0.06	0.177
14	<0.112	<0.25	<0.042	<0.042	E0.005	<0.088	<1.148	E0.004	<0.038
15	<0.112	<0.25	<0.042	<0.042	E0.03	<0.088	<1.148	<0.038	<0.038
16	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
17	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038
18	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038
19	1.47	<0.25	<0.042	<0.042	E0.007	<0.088	<1.148	<0.038	<0.038
20	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
21	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
22	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
23	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
24	0.166	<0.25	<0.042	E0.01	0.117	<0.088	<1.148	E0.02	E0.01
25	<0.112	<0.25	<0.042	<0.042	E0.008	<0.088	<1.148	<0.038	E0.008
26	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038
27	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
28	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038
29	<0.112	<0.25	<0.042	<0.042	<0.038	<0.088	<1.148	<0.038	<0.038
30	<0.112	<0.25	<0.042	<0.042	E0.01	<0.088	<1.148	<0.038	<0.038

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Methyl tert-butyl ether, µg/L (78032)	Napthalene, µg/L (34696)	Propylbenzene, µg/L (77224)	Styrene, µg/L (77128)	Tetrachloro-ethylene, µg/L (34475)	Tetrachloro-methane, µg/L (32102)	Tetrahydro-furan, µg/L (81607)	Toluene, µg/L (34010)	Trichloro-ethylene, µg/L (39180)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.112	<0.25	<0.042	<0.042	E0.006	<0.088	<1.148	<0.038	<0.038
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.112	<0.25	<0.042	<0.042	E0.009	<0.088	<1.148	<0.038	<0.038

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Trichlorofluoro-methane, µg/L (34488)	Vinyl bromide, µg/L (50002)	Vinyl chloride, µg/L (39175)	cis-1, 2-Dichloroethylene, µg/L (77093)	cis-1, 3-Dichloropropene, µg/L (34704)	m- and p-Xylene, µg/L (85795)	o-Ethyl toluene, µg/L (77220)	o-Xylene, µg/L (77135)	sec-Butylbenzene, µg/L (77350)
1	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
2	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
3	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
4	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
5	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
6	<0.092	<0.1	<0.312	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
7	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
8	<0.092	<0.1	<0.112	<0.038	<0.092	E0.03	<0.1	E0.02	<0.048
9	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
10	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
11	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
12	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
13	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
14	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
15	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
16	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
17	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
18	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
19	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
20	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
21	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
22	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
23	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
24	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
25	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
26	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
27	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
28	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
29	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
30	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	Trichlorofluoro-methane, µg/L (34488)	Vinyl bromide, µg/L (50002)	Vinyl chloride, µg/L (39175)	cis-1, 2-Dichloroethylene, µg/L (77093)	cis-1, 3-Dichloropropene, µg/L (34704)	m- and p-Xylene, µg/L (85795)	o-Ethyl toluene, µg/L (77220)	o-Xylene, µg/L (77135)	sec-Butylbenzene, µg/L (77350)
M1	---	---	---	---	---	---	---	---	---
M2	---	---	---	---	---	---	---	---	---
M3	---	---	---	---	---	---	---	---	---
M4	---	---	---	---	---	---	---	---	---
M5	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048
M6	---	---	---	---	---	---	---	---	---
M7	---	---	---	---	---	---	---	---	---
M8	---	---	---	---	---	---	---	---	---
M9	---	---	---	---	---	---	---	---	---
M10	---	---	---	---	---	---	---	---	---
M11	---	---	---	---	---	---	---	---	---
M12	---	---	---	---	---	---	---	---	---
M13	---	---	---	---	---	---	---	---	---
M14	---	---	---	---	---	---	---	---	---
M15	<0.092	<0.1	<0.112	<0.038	<0.092	<0.064	<0.1	<0.064	<0.048

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[°C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	tert-Butylbenzene, µg/L (77353)	tert-Pentyl methyl ether, µg/L (50005)	trans-1, 2-Dichloroethylene, µg/L (34546)	trans-1, 3-Dichloropropene, µg/L (34699)	trans-1, 4-Dichloro-2-butene, µg/L (73547)	Coliforms, total, cols/100 mL (31501)	Methylene blue active substances, mg/L (38260)
1	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
2	<0.096	<0.112	<0.032	<0.134	<0.692	1	<0.02
3	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
4	<0.096	<0.112	<0.032	<0.134	<0.692	46	<0.02
5	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
6	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
7	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
8	<0.096	<0.112	<0.032	<0.134	<0.692	60	<0.02
9	<0.096	<0.112	<0.032	<0.134	<0.692	3	<0.02
10	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
11	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
12	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
13	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
14	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
15	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
16	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
17	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
18	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
19	<0.096	<0.112	<0.032	<0.134	<0.692	<1	0.04
20	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
21	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
22	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
23	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
24	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
25	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
26	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
27	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
28	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
29	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02
30	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02

Appendix 1. Selected ground-water-quality data for sites sampled in the Southern Rocky Mountains physiographic province—Continued

[^{o}C, degrees Celsius; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; NTU, nephelometric turbidity units; pCi/L, picocuries per liter; cols/100 mL, colonies per 100 milliliters; ---, no data; <, less than; E, estimated; number in parentheses below the water-quality property or constituent is the data parameter from the U.S. Geological Survey National Water Information System (NWIS) data base]

Site (fig. 2)	tert-Butylbenzene, µg/L (77353)	tert-Pentyl methyl ether, µg/L (50005)	trans-1, 2-Dichloroethylene, µg/L (34546)	trans-1, 3-Dichloropropene, µg/L (34699)	trans-1, 4-Dichloro-2-butene, µg/L (73547)	Coliforms, total, cols/100 mL (31501)	Methylene blue active substances, mg/L (38260)
M1	---	---	---	---	---	<1	<0.02
M2	---	---	---	---	---	<1	<0.02
M3	---	---	---	---	---	<1	<0.02
M4	---	---	---	---	---	<1	<0.02
M5	<0.096	<0.112	<0.032	<0.134	<0.692	<1	0.03
M6	---	---	---	---	---	1	<0.02
M7	---	---	---	---	---	<1	<0.02
M8	---	---	---	---	---	<1	<0.02
M9	---	---	---	---	---	7	<0.02
M10	---	---	---	---	---	<1	<0.02
M11	---	---	---	---	---	<1	<0.02
M12	---	---	---	---	---	<1	<0.02
M13	---	---	---	---	---	<1	<0.02
M14	---	---	---	---	---	<1	0.03
M15	<0.096	<0.112	<0.032	<0.134	<0.692	<1	<0.02